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THE CHALLENGE AHEAD.[1]

By L. J. J. NYE,
Brisbane.

ERROL SOLOMON MEYERS was one of the great men of our generation of medical practitioners in Queensland. He was great because he turned from the lucrative practice of medicine to devote his energies throughout most of his professional life to a pressing need, the establishment of a medical school in Queensland, and to ensuring that a high standard of training was maintained in it. In the early 1930's I had the privilege of sitting with him as a member of the Branch Council of the British Medical Association, and I have never known any other man to give his services so unselfishly, so wholeheartedly and so vigorously, to reform the practice and teaching of medicine. Like all reformers, he waged a constant war against entrenched conservatism; but, unlike many, he had the great satisfaction of realizing some of his dreams, the finest of these being the establishment of the Queensland Medical School and his eventually becoming Dean of the Faculty. This annual lecture is a fitting tribute to his memory, and I am deeply appreciative of the honour that has been done to me by the invitation to deliver this, the second of the series.

When the request was made to me, I asked myself what type of lecture Errol would appreciate if he were with us. The answer I found to this question arose from the thought that he was always a progressive thinker, always taking up some new challenge. To me it seems that the greatest challenge that faces us all today is not in the realm of medicine, but in the future of our nation. It is concerning this, therefore, that I propose to speak. What I have to say is an extension of a thesis Professor John Bostock and I put forward in a book we published in 1934. I make no apology for elaborating it tonight, for I believe it deals with a problem that we should keep constantly in our vision.

Very few of us realize sufficiently that Australia, although it has a "Western" culture, lies in the "Eastern" world. The challenge this presents to us is whether we can survive as an independent nation in face of the rapidly increasing population of our Eastern neighbours, who are now fully awake to the enormous power of their organized nationalism and to their right to play important roles amongst the nations of the world. To answer this question we should look at Australia objectively, through the eyes of the historian. Only thus shall we see ourselves in true perspective. Only then shall we realize that the story of mankind is a series of cycles of social evolution, in which civilizations attain to high standards and even supremacy by industry, frugality, national spirit and

[1] The E. S. Meyers Memorial Lecture, delivered at a meeting of the Queensland Branch of the British Medical Association and the University of Queensland Medical Society on August 1, 1958.

ambition. Each civilization flourishes, becomes dominant for a few centuries and adds its quota to world knowledge and achievement. Then, like rich men's sons, its people become complacent, thinking more of luxury and sport than of national or human progress and thus it becomes effete, and of necessity gives place to a more virile civilization that has risen to challenge it.

Professor Toynbee, one of the world's leading historians today, tells us that there have been 26 civilizations, of which all but five are extinct (Western, Orthodox Christian, Islamic, Hindu and South-East Asian), and three are "arrested" (Polynesian, Nomad and Eskimo). Historians of the future will tell of a 27th civilization, the Communist civilization.

Historians and archæologists have given us a reasonably accurate presentation of the achievements of the civilizations of the past and of how their people lived. It will repay us to review some of those lost civilizations. Of those better known, although the Sumerian and Indian civilizations go back further in history, it will serve our purpose to start with that of Egypt, when the Pharaoh Khufu reigned in about 2900 B.C. at the beginning of its fourth dynasty. He built the great pyramid Cheops, an enormous structure occupying 12 acres of land, orientated due north, south, east and west. It is built on sand, of 2,300,000 limestone blocks, each weighing two to three tons. Farther up the Nile is Karnak, a city of temples, avenues of sphinx-like monuments and sacred lakes. There is seen the greatest colonnaded hall ever built by man.

Besides showing remarkable skill in building, these Egyptians mastered the science of hydraulics, devising a system of dykes, locks, reservoirs and irrigation canals, by means of which they controlled the annual floods of the Nile and conserved the water for their crops throughout the year.

Throughout ancient Egypt there is also evidence of the deep interest of its people in culture, expressed in its sculpture, art and literature. In their social organization, too, they had humanitarian ideals. This inscription was found on one of the tombs:

> I have not oppressed any widow, no prisoner languished in my days, no one died of hunger. When there were years of famine, I had the fields ploughed. I gave food to the inhabitants so that there were no hungry persons. I gave the widows equal portions with the married. I did not prefer the rich to the poor.

They were also skilled astronomers, and it is now known that they were aware that the earth rotated round the sun, whereas in Europe it was not until the sixteenth century that Copernicus remade this discovery; previously it was believed that the earth was the centre of the universe. Yet, in spite of all its skill and culture, Egypt deteriorated so utterly that all the arts and sciences of its people were forgotten.

Another civilization, the Assyrian-Babylonian, flourished between the Tigris and Euphrates rivers. Its people were capable engineers, builders and metal workers. They were also skilled astronomers, and we probably owe to them the first mathematics. In about 2100 B.C. Hammurabi instituted his famous penal code, which standardized punishments and made a system of awards for various types of work. Yet this advanced civilization disappeared so completely that it is only during recent years that archæologists have been able to piece the relics together and give us some conception of its greatness.

Another civilization, the Ægean or Minoan, which flourished about 2000 B.C., likewise disappeared completely. It was not even known to have existed until a comparatively recent date. Its people were a race of merchant traders centred in Crete. They were so advanced in their social organization that they had street drainage and indoor flush closets.

The greatest civilization of all time in many ways was that of Greece, which lasted from 800 to 200 B.C. During this period culture rose to heights previously unparalleled in the history of mankind. We owe to Greece much of the concept of democracy and trial by jury; and much of our philosophy, mathematics, literature, science, dramatic art and religion is founded on Greek inspiration. The first attempt to get states together in friendly rivalry was made by the Greeks in the Olympiads, the first of which was held in 776 B.C. Probably more important than anything else that we owe to the ancient Greeks are the development of the æsthetic side of man's nature and the replacing of superstition by logical reasoning and free speculation.

Yet, once again, in spite of all their science and logic, the Greeks followed the same historical pattern of decline. They ignored the warnings of their wise men, and sports and luxuries became their main interests, so that they fell easy prey to invading armies of nations whose people had never known comforts, but who were toughened by hardships and spurred on by a rising nationalism.

The next racial upsurge was that of the Romans, which some historians include in the Hellenic civilization. The Romans certainly absorbed much Greek culture and, by the might of their armies, spread it throughout Europe, Northern Africa and the Middle East, so that a Roman's simple declaration *"civis Romanus sum"* was a passport that carried prestige and protection wherever he travelled. But Rome's greatest contribution to humanity was probably its code of rules for civil organization and administration. Our modern training in civil law is based on the Justinian Code. It taught the world also the value of discussion and debate, and of settling disputes by compromise.

Once again, however, we see the same cycle of ripening, decline and fall in this mighty empire — the most impressive the world had ever known. In this case historians have ample records to give us a true picture of the factors leading to its decline.

These great civilizations of the past having collapsed, seemingly inevitably, we may well ask ourselves whether our much-vaunted Western civilization will not follow the same historical cycle.

We have the same emotions and the same intelligence as those ancient people had; we think and act as they did; but we have more knowledge and experience than they had. Shall we be wise enough to use this knowledge and experience to prevent another social cataclysm? There are many historians who believe we are already well on the way to decline. They see in our society a remarkable similarity to that of Rome during its darkening days.

One of the most demoralizing features of the Roman Empire was its uncontrollable urbanization. People of the best rural types were lured to the cities by glamour and luxury, until the drift from rural occupations reached such an alarming stage that in A.D. 193 an edict of Pertinax gave free title to unutilized land to any person who would settle on it. But this did not stem the flow of the people to the cities, and the government was compelled to import barbarian soldiers and their families to settle on the land. In Australia we see a similar alarming rate of urbanization. Our five capital cities are crowded with more than half the total population of our whole continent. Such mass urbanization engenders artificiality, lack of resourcefulness, increased nervous tension, poverty, malnutrition and neuroses, all of which presage national decline.

Another similarity between us and declining Rome is the glorification of sport. In Rome, the chariot races and gladiatorial combats attracted crowds of hundreds of thousands. The Romans, like us, awaited the result of a sporting event with as much grim interest as if the fate of the nation depended upon it. During this period the Romans vied with each other in enjoying luxuries and organizing festivities, and lost interest in truly national affairs — very much as we are doing, with so much of our interest centred on sport and "keeping up with the Joneses".

Another factor in the decay of Rome was the decline in moral and spiritual values, as shown by the increasing number of divorces. In Australia the divorce rate, although not yet to be compared with that of Hollywood,

has increased by 200% since 1900, and the number of husbands deserting their wives has increased fourfold during the past ten years. Apart from moral and spiritual considerations, the adverse psychological effects of divorce or desertion on the children of such broken homes are well known to all social workers.

As an indication of the alarming increase in juvenile crime, Mr. Justice Le Gay Brereton recently stated that "at present one person in every ten in New South Wales would face a criminal charge before the age of twenty-one". These are our citizens of the future.

By far the greatest menace to all civilizations is the decline in the birth rate amongst the people best fitted to rock the cradle of the race. In Rome, the urge for luxurious living and sport was responsible for such an alarming resort to birth control that the government enacted legislation to give extra benefits to those who bore children and to penalize those who remained single or were childless in marriage.

The historian Polybius, writing a history of Greece in 160 B.C., attributed the ruin of that country to birth control, which was used mainly by the more intelligent sections of the community.

In 1949, in England, a Royal commission of experts on sociology and population concluded that the greater ratio of breeding amongst the less intelligent people, due to the practice of birth control amongst the more intelligent, had resulted in a decline in the intelligence quotient by about two points in every generation.

If Western civilization is declining, it is pertinent and important to us to inquire where the next upsurge will occur. Many historians believe the Slavonic square-heads will take the lead. It is certainly very sobering to us to contemplate the progress made by Soviet Russia since the revolution in 1917.

But in spite of the amazing achievements of the Russians, many sociologists believe that China, with her 600 million frugal and industrious people, will outstrip them.

The Chinese had been misgoverned for centuries and had no political freedom and not much concept of "The State". Most of them kept as far away as they could from officialdom. They had naturally, as well as in acceptance of Confucian precepts of filial piety, rallied in clans and families. But in the villages they had always lived more or less communally, and they accepted the new communist régime as probably no worse than the corrupt and tyrannical administrations that had gone before. Serious doubts entered when private initiative and enterprise were stifled. But if the people have no real love for their present government they are proud of its achievements, and this pride is shared by Chinese living abroad, however much they deplore communism and its practices. Militarily, socially and economically, as well as politically, it is a new and much more efficient China.

With this approach to national self-sufficiency there has been much social improvement. Everyone must work, and there are no "spivs" or profiteers. Admittedly there is little colour, and life is said to be monotonous and dull; but the cities are clean, and the people healthy and well-behaved.

In the past the Chinese intellectuals were individualists, but since they have observed the great benefits conferred by the new order many of them have become its supporters. Recent unbiased observers state that there has been also a great moral change. Previously the rich lived lavishly, indulging in or encouraging ostentatious luxury, gambling, prostitution, drug-trading and other evils. Now a wave of puritanism has spread throughout the country. Not only have prostitution and opium-smoking been suppressed and adultery made a criminal offence, but the people themselves frown on pretentiousness and luxury. Their form of communism has become a new, dynamic religion.

When we remember what Japan, with barely one-sixth of China's population, accomplished in less than a hundred years, we cannot even hazard a guess at what China may achieve. Before 1853 the Japanese, fearing disruptive foreign influences, had isolated themselves from the world for 200 years. They expelled every foreigner; no Japanese was allowed to leave the country, and no foreigner to enter. They lived in a primitive feudal state. They had no heavy industries and no ocean-going ships. In 1853 a squadron of American warships was sent to Japan under Commodore Perry, and later British, French, Russian and Dutch warships appeared. By veiled threats and skilled diplomacy they persuaded the rulers to open Japan's ports to trade, and a treaty was negotiated at Osaka. Japan's progress since that date has been amazing. In the short period of less than a century Japan rose from a primitive society to become one of the world's great powers. She had one of the largest and most efficient merchant fleets, the largest battleship afloat, and the largest and fastest submarines. Today, although most of her industries were destroyed and her chief towns devastated by bombing in the second World War, her people have made such a phenomenal recovery that they are now building more ships than any country in the world. If Japan's 90,000,000 people with very little natural resources have accomplished all this in such a short time, we may well ask ourselves what possibilities lie before China's 600,000,000 hardy, industrious people — "blue ants" as they have been aptly termed — and what the future holds for our 10,000,000 sport and luxury-loving thirty-five to forty hour week workers.

The events I have traced in this historical survey are factual. The future is speculative; there is, however, much help to be gained from the past to guide us in our planning.

Arnold Toynbee tells us that the fate of civilizations depends on how they react to the challenge of the times. The challenge to us today is that of a small community of 10,000,000 people, with a Western culture and Western standards of living, in the most sparsely populated country in the world, confronted with 1,200,000,000 land-hungry Eastern people, who exist on a substandard diet and are increasing by approximately 25,000,000 every year.

When Errol Meyers was confronted with a challenge, he faced it squarely and determined to find a solution. We should follow his splendid example. We must do so if we are to survive. Each of us should ask himself: "How would I react to this challenge if I were a member of the government or an executive of one of the trade unions, on whose actions our future so largely depends?" To answer this question we must first agree upon the premises. Are we following the old historical pattern of decline? Are we satisfied with the growth of our nation and the character of our people? Are we giving our youth the best possible education? Is there a deterioration of our moral values? Are our trade unions helping or hindering our development? Should we be more vigorous and happy if we had more discipline and higher ideals? Are we satisfied with our defence organization? These are questions we all should consider. I propose to suggest answers. You may not agree with my submissions. That is not to be deplored, for disagreement provokes thought and discussion, which may stir us to action.

First of all, it is necessary that we should try to divorce ourselves from our habitual conditioned thinking and look at our problem as historians would. These men think in terms of centuries; we think in terms of today or at most the date of the next election. We must introduce the dimension of time into our thinking. When I was as old as some of you I was in France fighting for an imperialistic Britain against the challenging imperialistic Germany. The Russians, Indians, Chinese and Japanese were our allies. The Russian army, although large in numbers, was poorly equipped and lacked morale. India made a notable contribution in fighting men. China had no army, but supplied a labour force, and Japan gave valuable assistance with her small but efficient navy.

At that time communism was only a theoretical ideology. Since then, all these former allies have become powerful

nations with well-equipped armies, and we cannot count on even one as an ally. If these changes have happened during the latter half of my life each of you may well expect changes equally as astounding in yours. In face of certain change, you will quickly realize that we need a revolution — not a bloody revolt, but a revolution in our thinking. If we engage in this, what conclusions shall we reach concerning our pressing needs? I shall mention a few of our most urgent problems for you to consider with me.

Immigration.

Our most urgent need is population of the right type. It is interesting that geographers and economists have independently arrived at the conclusion that Australia's population potential on our present standard of living and development is approximately 40,000,000. For reasons of defence as well as development it is essential that we reach this total as rapidly as our economy will permit. Can we attain it to best advantage by adhering to the narrow racial lines of our present immigration policy? We should remember that sociologists believe that a mixture of races, with its competition and interplay of culture, is stimulating and vitalizing for the progressive development of a young country like Australia.

In any consideration of immigration the so-called White Australia policy must come under review. With our knowledge of anthropology, psychology and sociology we medical men should be especially qualified to give an opinion on this subject. The *Immigration Restriction Act*, whereby Asians became prohibited immigrants, was passed in 1901. Nowhere does it use the term "White Australia". The effect of its enforcement, however, was selective immigration — and the man of colour became at once a prohibited immigrant. No one could doubt that such legislation was essential at that time in order to maintain our economic and cultural standards, because the white population was small and there had been a rapid inflow of Asian migrants, who settled in communities, worked long hours, lived very frugally (usually in squalid, substandard dwellings) and sent most of their savings to their homelands. Today, however, conditions can be so controlled that we should ask whether we are justified in continuing the rigid exclusion of the early twentieth century.

Do we continue to impose the restriction on the assumption that Asians are socially or biologically inferior? Certainly we do not. There is no question of inferiority. We all belong to the same human biological group. The only differences between us are the colour of the skin and the environmental backgrounds. In considering background, it is sobering to remember that all the world's great religions had their origin in Asia; also in our days the philosopher Keyserling, after studying Asian ways of life, concluded that the East believes in "being" while the West is more concerned with "appearances" and "make-believe".

Do we continue the White Australia policy because of racial prejudice? All races have their prejudices. The Asians are perhaps more prejudiced against us than we are against them. Racial prejudice, like religious and class prejudice, grows from the herd instinct and from ignorance. The degree of prejudice is in inverse ratio to the degree of enlightenment. In the Cape York Peninsula I was amazed at the extreme prejudice shown against each other by primitive aborigines of different tribes. By contrast, at international gatherings of learned societies there is no apparent prejudice amongst the delegates from the various races of the world.

Personal prejudice cannot be corrected by legislation or official order; each individual must be permitted his likes and dislikes. However, when prejudice becomes a national policy it also becomes a calculated affront. Undeniably the White Australia policy is resented, and no amount of explanation will remove that resentment, because it is a natural reaction to a seeming suggestion of inferiority. Moreover, although policy may be officially expounded as benign, in the enforcement of policy much of the benignity is lost. There have been many unfortunate incidents involving Orientals which have caused very hostile reactions in the Asian world.

Do we cling to our White Australia policy because we are afraid that Asian migrants would work harder than we do? We have admitted many thousands of Greeks and Italians who work harder than we do, and they have not disrupted our economy. Labour is so well organized today in Australia that there can be no excuse for not working harder and giving more faithful service in the forty-hour week. This approach to work is urgently needed here.

I believe the main factor responsible for our rigid exclusion is that we are afraid that Asian migrants would all combine as subversive agents in our midst and act in concert as a fifth column against us in the event of war. If the migration was limited by quotas, even liberal quotas, racial prejudice among the various Asian people would of itself prevent dangerous unity. Their children would attend our schools and universities and associate closely with our children. In two or three generations their culture would be Australian, and it is language and culture, not breed, that create national loyalty.

This is borne out by the conduct of the Japanese of Hawaii in World War II. Their loyalty was so overwhelmingly American that, with a population ethnically 36% Japanese, not one act of sabotage was recorded, although after the destructive attack on Pearl Harbour it was expected that the Japanese would invade the islands.

If one views the situation objectively, it seems that there is no logical reason for continuing the present policy of total exclusion of Asians. On the other hand, because of their different culture, it would be utter folly to permit unrestricted immigration of Asian people. But a liberal quota can be conceded, and only those admitted who have a reasonable degree of Western culture. There could then be a slow blending of the races. There is, moreover, evidence that the health of the people of the northern half of Australia might be benefited by the introduction of some melanin pigment into their skins; such blending would give us a population with skin better suited to our climate. In time this blending of the races would make Australia in its population what it is in geography, a half-way house between East and West.

Our total exclusion of all Asians, while we have been giving assisted passages to dark-skinned Southern Europeans, is insulting, since they must believe that we consider them either inferior or undesirable. This question is so serious that it should be studied very carefully without prejudice, for we claim to have Christian ideals and to believe in human brotherhood, and we are actively bidding for the friendship of the Asian peoples; yet we persist in a policy which estranges them. They consider the Australian attitude as an outstanding example of racial prejudice.

Fortunately, there exists opportunity for us to study the assimilability of different races in what the sociologists call the world's "areas of reconciliation". Brazil is the largest of these "melting pots", but the one better known to travellers is Hawaii, where a very encouraging human experiment is being conducted amongst people with strongly contrasting ethnic and cultural backgrounds. About 400,000 labourers — Japanese, Chinese, Koreans, Filipinos, Puerto Ricans, Portuguese and Germans — were imported for work on the farms. These have provided the world's most interesting laboratory of racial and cultural fusion. Sociologists have been studying this complex mixture of Occidental and Oriental peoples, and their verdicts are unanimous that there is such a blending, through marriage and association, that the many races of Hawaii are losing their identity and becoming one. Andrew W. Lind, Professor of Sociology at the University of Hawaii, after a quarter of a century of research in racial relationships, pens the following conclusion to his recently published book "Hawaii's People":

> It is reasonable to assume, and evidence available from other sources supports the proposition that assimilation in the spiritual fusion of Hawaii's people moves more rapidly than amalgamation or biological fusion, but both processes are moving irresistibly forward. The peoples of Hawaii are becoming Hawaii's people.

Lind also quotes Edward L. Bernays, an American public relations expert, who, after an investigation of social relationships on the islands, stated: "Hawaii is possibly as nearly democratic as any country in the world." My personal impression as a visitor is that they are the happiest people I have ever been amongst.

A quota system would offer advantages over the present lack of system. Asians other than students are in fact being admitted to Australia in small numbers. Usually, however, they are the relatives or business associates of domiciled Asians and are not in the full sense "selected immigrants". Meanwhile some first-class Asian brains are available, but are excluded for lack of sponsorship. A quota system would admit some of them. In recent months many Chinese refugee intellectuals from Hong-Kong have been permitted to enter the United States. It is logical to assume that they will enrich American culture and add to American scientific and other achievement. Physicists who have recently been prominent in the American scientific fields have included several Chinese. There is much to support the opinion that a judicious admixture of Asian blood would do Australia far-reaching good.

Decentralization.

With increased population comes the necessity for its most effective utilization, and in our plans for increase it is essential that we should have blueprints for decentralization. In spite of the warnings of economists over many years, we are following the example of Rome by attracting more and more people to our cities, where they live in artificial conditions and in a state of tension unknown in rural areas. Sydney, Melbourne and Adelaide all hold more than half of the total population of their States. This urbanization is most marked in South Australia, where, of a total population of 874,000, Adelaide has a population of 537,000, and the second largest town in the State (Port Pirie) has only 16,600. Queensland has a total population of 1,390,000. It is endowed by nature with good ports along its long coastline; yet our capital city of Brisbane, situated in the southern corner of the State, has a population of 543,000, which is growing at the rate of approximately 16,000 yearly.

Apart from the degenerative and demoralizing effects of urbanization, we should be mindful that if an enemy wished to occupy Australia, all that would be needed would be for six submarines to fire atomic bombs on our five capital cities and Newcastle simultaneously. There would be such destruction and confusion that the way would be completely open to the invaders.

Education.

The next essential is improved education. This is imperative if we are to compete with the communist world.

Medical men are interested in education because they have seen how much ill health, both mental and physical, is brought about by inadequate education and wrong thinking. Quite apart from the mental conflicts which bring patients to our consulting rooms, the social behaviour of many of our people is far from satisfactory.

We need to devote much more attention and money to training our young people, firstly in teaching them to become good citizens, and secondly in enabling them to make worthy contribution in their various vocations. To bring this about, the period of compulsory free primary education should be extended. The size of classes must be greatly reduced, for it is frustrating for one teacher to control a class of 40 or 50 pupils, as often happens today.

Primary education should be completely reformed so as to teach the principles that are essential for harmonious cooperative living and for world citizenship. All the world's greatest teachers from Socrates onwards have stressed the need to "know thyself". Practical psychology should therefore be taught, so that our young people may have a knowledge of their instincts and emotions, in order that they will understand themselves and thus learn to discipline themselves.

Our children should be taught also to think, to sift information, and arrive at conclusions by their own reasoning and to be accurate in any statements they make.

Secondary education likewise should be free, and pupils who show sufficient enterprise and industry to qualify for university courses should have not only free tuition and books and similar help, but also an endowment in order that they can live without being a burden to their parents.

Our failure to make a scientific approach to education has caused us to give boys and girls almost identical teaching. It is of paramount importance to understand that men and women are not equal; they are biologically different, although each sex is complementary to the other. Men are superior to women in some attributes, women likewise superior to men in others. Deep in the heart of every normal young woman, of course, is the instinctive urge to become a wife and mother, and it is only after a period of frustration that she can devote her energies wholeheartedly to some other career. It is important, therefore, that, although much of their education should be the same as that of boys, all girls should be taught homecraft and mothercraft. It would encourage women to develop the arts for which Nature has intended them.

This essential training for women would not deny them the right to follow careers other than matrimony. It would merely ensure that they would first be adequately trained for the part most of them will be called upon to play in the scheme of life. Without happy homes and increased birth rate amongst the best elements of our population our outlook for the future is surely dismal.

In recent years selfish materialism has become much more manifest. In any community, since moral sense is more important than intelligence, more attention should be given in schools to teaching social ethics. This would result in more self-discipline and therefore less need for external sanctions.

Education can never be adequate until we have aroused the inherent æsthetic sense in each student by music, art, literature and the development of the various crafts. For this purpose, and to assist in the over-all educational reform, we need a Ministry of Culture, which would amongst other things encourage people to occupy their increasing leisure hours with interesting hobbies and thus save many from the boredom that drives them to drinking and gambling.

Teaching should rank as the most important of all the professions, because man is a creature of habit and his behaviour is conditioned almost entirely by his education and associations, and not by his own thinking, as he so fondly imagines. On all sides we see how educational influences determine our habits, our manners, our religion and even our political outlook. We must realize also that the conduct of the majority forms the conduct pattern for the "herd"; if the majority is earnest in following what is true and right, the conduct of the "herd" as a whole must be uplifted automatically. Since such a tremendous responsibility is given to our educationists, it is imperative that our best types of men and women should be attracted to the teaching service. They should be carefully selected for their capacity to teach and to give the right inspiration to our young people. It is a sad indictment of our social organization that many classes of unskilled workers, who have given no part of their lives to study and accept no civic responsibility, are paid almost as much as our teachers, who are so directly responsible for the cultural and moral future of our nation.

The Press.

The chief interest of the Press today is naturally to make as much profit as possible for the shareholders. It is well known that this is best achieved by appealing to readers' emotions. Editors therefore highlight all emotionally exciting news — sport, sex and crime — so that if a movie star and a distinguished scientist arrive on the same aircraft, the scientist often goes unheralded, while the lady with the blonded hair and the plunging neck-line is featured on the front page. This treatment has produced the "headline" news of today's newspapers, in which important events such as foreign affairs or new researches are often buried in the back pages.

As the Press is one of the most potent forces in moulding public opinion, there should be a national daily paper under the direction of a commission appointed by the only bodies competent to convey unbiased and balanced information — the universities of Australia. This commission would be completely divorced from political interference; and, in order to modify the inevitably corrupting influence of power, its members should retire in rotation so that there would be a change in membership at regular intervals of time.

Alcoholism.

Alcoholism is becoming a very serious menace to health and happiness throughout the Christian world. In a country like Australia, whose climate and working conditions give so much time for developing interest in the arts and crafts, sports, gardening and other forms of real recreation, there is no logical reason for the extensive use of alcohol.

The recently formed Foundation for the Research and Treatment of Alcoholism has shown that there are approximately 300,000 chronic alcoholics in Australia; and the numbers are increasing at such an alarming rate that it is estimated that one in every 14 drinkers in Australia either is or will become a chronic alcoholic.

A. T. Pearson (1957), in Perth, has shown how very serious and menacing are the effects of alcohol in causing road accidents. In that city, since 1950, it has been the practice to take estimations of the alcohol in the blood and urine of all persons killed in road accidents with the following alarming results:

> . . . out of 218 tests performed, 92 (42·2%) revealed alcohol in the blood. If a blood alcohol content of 0·1% (100 milligrammes of ethyl alcohol per 100 millilitres of blood) is taken as the level of insobriety for the purposes of driving a motor vehicle—and this is the level accepted in other countries (for example, Denmark)—then 39·4% of these people killed were under the influence of alcohol. In simpler terms, four in every ten fatal traffic accident victims were dangerously under the influence of alcohol at the time of the accident.

We, as a profession, should take a lead in the fight against alcoholism and set an example, either by abstaining entirely from taking any intoxicating liquor (as is done by all good Mohammedans, Buddhists and Hindus), or by using it in moderate amounts only immediately before or with meals. We should go further and recommend that every person who gets drunk should be considered mentally unstable and should have psychiatric treatment. This step alone, I feel sure, would be a very helpful deterrent to the alarming increase in social drinking, which often results in chronic addiction.

The Trade Unions.

The trade unions in the past have played a magnificent part in bringing about a social revolution without bloodshed in Britain, Australia, New Zealand, U.S.A., Canada and northern European countries. They can look upon these achievements with pride. Until recent years society was divided into two groups, the exploiters and the exploited. Australia has given a lead to the world in controlling the would-be exploiters by awards, tribunals, works and building inspectors, provision for annual, sick and long-service leave, and workers' compensation and similar legislation; and, although labour leaders still use their election battle-cry of "class distinction", it has very little substance today, for we often find a doctor or a lawyer whose brother is a manual worker. Most of those who remain in the lowest stratum of society are there because of their own laziness or ineptitude.

The trade unions, having won their battles for reform, and having gained for the Australian workers shorter working hours and more holidays than any other civilized country affords, should now devote serious attention to disciplining their members, for only by faithful work during these limited hours can we maintain this luxury. Unfortunately, there is still a tendency for some of the workers and their leaders to think it is good ethics "to bludge on the boss", even when the boss is the people themselves, as in government and municipal employment. I believe that the trade union leaders today play a major role in controlling our destiny. I hope they will realize their responsibility to the nation and demand the same faithful service from their members as was expected from members of craft guilds in the past. They should impose equal penalty upon the man who loafs on his job as the law imposes upon a thief who steals from a shop.

Having no more worlds to conquer, trade union leaders still raise their outmoded outcry against "capitalistic monopolies". In the bad old days these were owned and controlled by ruthless individualists for the benefit of themselves and their families; but today most of them are so well controlled by legislation, and their ownership is so widely spread throughout the community, that they have become national enterprises on which the future development of our country largely depends. They are good examples of the socialization of the ownership of industry in a democratic State.

The few people who still have large holdings in big companies no longer make fortunes, because high incomes are subject to very high rates of tax. Also, most of the big companies do not distribute the greater part of their profits amongst shareholders, but retain them for further development and research. Moreover, they almost invariably provide for their staff good amenities, generous sick leave and superannuation. Why they are operated efficiently is because promotion is by merit and not as in State socialist enterprises, where seniority and political influence play major and stultifying roles.

Defence.

It is a basic truth that the history of mankind is largely a story of the eternal struggle for food and raw materials. Hungry people will naturally demand subsistence for their families, and if it is not obtainable in their own country they are inevitably forced to fight to take it from others who have more than they need.

In Japan, approximately 90,000,000 people are living in an area less than the size of New South Wales, and only 15% of it is arable. By great industry and extreme economy this area is able to support 4300 persons per square mile — the highest ratio in the world.

The 600,000,000 Chinese are living on approximately one acre of land per person. It is estimated that they are increasing at the rate of approximately 15,000,000 annually. There are similar increases in other Asian countries. In Nationist China (Formosa), owing to the introduction of modern hygiene by the Americans, the birth rate has increased to 45·3, while the death rate has decreased to 8·6 per 1000 of mean population ("Demographic Year Book", 1956). In Australia the birth rate is 22·5 and the death rate 9·1 per 1000 of mean population.

Until the under-privileged people limit their breeding, as the Japanese are now doing, we must help in their development towards self-sufficiency by generous extension of such aid as the Colombo Plan. At the same time we must always be prepared to defend ourselves against aggression until the time when there is such international control that predatory nationalism will not be feasible. Till then we should continue compulsory defence training

for all our young men. This is essential to develop a national spirit and to equip them to accept their share of responsibility in the defence of their country.

Mobile training camps should be established at the sites of national developmental projects, and the trainees should devote part of their time to military training and part to construction work. Amongst these projects could be building interstate highways for our ever-increasing road transport, or the unification of the railway gauges throughout Australia, which is necessary for defence as well as for economy in transport. As the trainees would have no living expense while undergoing their training, they should be paid only a token amount for pocket money. Every young man should be compelled to undergo national training for at least six months. If he is unfit for field work, he should do office duty. Everyone needs discipline and should be proud to play his part in this plan for character building, national development and defence of his homeland.

Nearly 100 years ago Winwood Reade wrote:

> It is not probable that war will ever absolutely cease until there is invented some destroying force so simple in administration, so horrible in its effects that all art, all gallantry will be at an end; and battles will be massacres which the feeling of mankind will be unable to endure.

It is hoped that we have reached this stage now, for it appears that so long as conflicting nations retain nuclear weapons neither side will risk the unthinkable consequences of war. It is therefore imperative that there should be no abandonment of these key weapons until agreement has been reached on full disarmament.

The formula for peace as I see it would be that each nation would be permitted to build border fortifications within its own territory, and these would be manned not by their own troops but by foreign troops under the direction of the United Nations. All ships of war, including submarines, would be sunk, and all guns, tanks and military aircraft would be scrapped. To train para-troops would be forbidden, and no munitions would be manufactured except by the United Nations. All countries would be open to full inspection by United Nations observers.

There could be willing cooperation amongst all the people of the world. What is needed is honesty and goodwill among the men at the top.

The threat of atomic destruction appears to be the only hope of bringing about this simple solution to the age-old menace of war; for this reason atomic weapons should be the last to be abolished.

When one considers the enormous expenditure of the nations on war preparedness, it seems utter folly that they do not agree to make this rational approach to the problems of their own safety and survival. At present all nations spend crippling proportions of their incomes on defence each year. In Australia in 1957 our 10,000,000 people spent £190,000,000. The United Kingdom spent £1,483,000,000; U.S.A., £15,374,000,000; U.S.S.R. (estimate) £11,435,000,000. If half of this money was devoted to developmental and cultural projects at home and the other half to helping the backward countries the world would gradually be transformed and become a harmonious place for intelligent people, instead of a madhouse in which, decade after decade, nations destroy their best "breeders" at such a cost that even the victors are grievous losers.

Finally, Australians should be more mindful of the splendid part they have played in social reforms. We have been amongst the pioneers of the world in the settlement of labour disputes by arbitration and conciliation, in the secret ballot, in compulsory voting and in free and compulsory education. This should encourage us to go much further and give more thought and leadership to improving relationships among the people of the world, and towards devising some effective form of international organization of the people of the world. The United Nations Organization has been very helpful as a forum for the discussion of international problems, but it is of no value for effective world government. Apart from the difficulty arising from the veto, each country, no matter what its population, has only one delegate, who is briefed by his home government and is compelled to consider any proposition from his own national viewpoint.

What appears to be needed is a world government, as advocated by many of the world's leading intellectuals. Its members would be required to have high judicial attainments and experience, and would be elected by various ethnic groups. They would be expected to renounce their national citizenship for world citizenship. At first they would be merely a moral force giving judgement and guidance on international problems. When they had gained the respect and confidence of the peoples of the world, nations would gradually agree to surrender their sovereignty in respect of army, navy and air forces, which would be organized and controlled by the world government alone. All international problems and conflicts could then be settled with efficiency and without prejudice.

Encouraged by such an organization, groups of people now forming different nations could agree by properly controlled elections to join other groups in federal unions. Such federal unions would still be subject to world government. Enormous advantages would accrue from these unions, for there would be one currency for each, one post and telegraph system, similar hours of work and pay, and removal of customs barriers. Then, and then only, will humans show that they are sane and well balanced, and that man is worthy of the title *Homo sapiens* — man the intelligent.

Conclusion.

The expenditure on all these reforms will be considerable; but the money can and must be found if we are to survive. We should always remember that during the war years we found the money to keep approximately 1,000,000 people (of a population of 8,000,000) in the various services doing non-productive work.

To many people these proposals may sound too idealistic to be practical. That is the attitude of the escapist, who will not face the facts which are well known and which are challenging us today. The reforms proposed are far more realistic, far more practical and desirable than interplanetary travel, towards which many of our best brains are being directed, and on which countless millions are being spent.

In spite of all the visions of catastrophic upheavals, the ordinary man, as ever before, will continue to live according to the dictates of appetite and habit. He will exercise his intellect at no higher level than the study of his "guide to form". But the people's elected representatives in the various governments, and the trade union leaders, are not ordinary men. They should realize that they have been selected by the people and entrusted with the enormous responsibility of forming the policies on which our nation will progress or decline. It is their duty to sink their party differences, forsake their vote-catching tactics and face the most serious problem confronting us, which is not whether there will be a substitute for wool, on which our economy so much depends, not whether our secondary industries can compete in world markets on our high wages, not whether our sportsmen will do well at the next Olympiad; it is whether we can survive as a free nation against the inevitable avalanche of intelligent, hard-working and well-disciplined peoples of the East, who must be forced to take necessary action for their own survival.

There is no truth in the often-repeated phrase "the inexorable march of events". What happens in the future will depend upon the thoughts and actions of intelligent men and women, and upon how they react to the challenge ahead. What is most needed is inspiring leadership—men who will face the facts, tell the stark truth and point the way. Australians will respond to the call.

Society is merely an extension of the individual. It is made up of people like you and me. Whatever we do in

our private or public lives is reflected in society. Therefore I say to you as citizens:

> *Noblesse oblige*: The privileges you have enjoyed in living in this wonderful country and the education you have had, impose upon you an obligation to play an active and worthy part in shaping its destiny, remembering always that there is no progress in civilization unless there is progress in charity, but also remembering the words of the historian, Spengler: "World history is the world court and it has ever decided in favour of the stronger, fuller and more self-assured life."

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RECENT ADVANCES IN THE CHEMOTHERAPY OF CANCER.

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THE impetus to cancer chemotherapy came just after the second World War with reports of clinical palliation from nitrogen mustard administration in the lymphomata. Since then, numerous chemical compounds have been isolated which give good but temporary palliation. In spite of extensive research with thousands of new compounds, we still know no agent which by itself has been proved to cure any type of cancer in man.

In this country, most of the clinical trials carried out in the past have been on new compounds which have shown definite clinical promise overseas. By that stage there has already been worked out, upon a number of selected late cases, a schedule of dosage and a knowledge of associated toxic effects. We are thus less likely to be influenced by premature, subjectively coloured reports of new chemotherapeutic successes. On the other hand, there is a constant pressure, from relatives of patients, upon the clinician engaged in work with cancer to try any new drug from the use of which benefit has been reported. For this reason, a balanced knowledge of the field of chemotherapy is essential in order to practise discrimination and restraint in the selection both of agents and also of patients for such treatment.

Development of New Agents.

A general survey of the scope of cancer chemotherapy has been made in a previous paper (Stoll, 1955). No attempt is made here to survey completely the large number of agents whose trials have been reported clinically in the last ten years. Only those agents which have shown definite value in extensive clinical trials are mentioned.

The quantitative differences between the chemical pattern of cancer tissue and that of normal tissue has so far directed chemotherapeutic research. Broadly speaking, cancer tissue shows a relative increase in water, nucleic acid, lipoid, glycogen and potassium content, and a relative decrease in total protein, free amino acid, vitamin B complex and calcium content. Although it is theoretically possible therefore to damage selectively cancer tissue and spare the normal tissue, unfortunately the margin is very narrow, and toxicity to the host is inevitable with the compounds in present use.

A large body of research has been directed to developing antimetabolites to nucleic acid synthesis, in the hope of decreasing desoxyribosenucleic acid synthesis in the malignant cell (Figure I). Thus the folic acid analogues (e.g., aminopterin) prevent the change from folic acid to citrovorum factor necessary for purine synthesis. The vitamin antagonists (e.g., antipyridoxin) interfere with purine synthesis by competing with the natural vitamin. The purine analogues (e.g., 6-mercaptopurine) and the pyrimidine analogues (e.g., 5-fluorouracil) interfere with the oxidation of purines and pyrimidines respectively and form abnormal nucleic acids. The alkylating agents (e.g., nitrogen mustard) combine readily with nucleic acid and form abnormal nucleotides. They also tend to cause crosslinkages between chromosomes thus subsequently producing abnormal mitosis and cell death.

Figure II shows examples of antimetabolites now used in clinical chemotherapy, with the dose, route of administration and toxic effects. Aminopterin was the first member of the folic acid analogues to show clinical

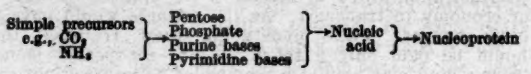

FIGURE I.
The synthesis of nucleoprotein (diagrammatic).

value, and was introduced in 1948 by Faber. Since then methotraxate and its more recent dichloro derivative have been found the least toxic of the antifolic group. 5-Fluorouracil has recently been reported to yield encouraging palliation in occasional cases of solid carcinomata. 6-Mercaptopurine still retains its place as the most useful of the purine analogues in the treatment of

Substance.	Dosage.	Toxic Signs.
Amethopterin (folic acid analogue).	Oral dose, 2·5–5 mg. per day.	Mouth and bowel ulceration and bone-marrow depression.
5-Fluorouracil (pyrimidine analogue).	Intravenous dose, 15 mg. per kilogram per day.	
6-Mercaptopurine (purine analogue).	Oral dose, 2·5 mg. per kilogram per day.	Bone-marrow depression.
Vitamin antagonists: Anti-pyridoxine. Anti-nicotinic acid. Anti-riboflavine.		*Amino acid antagonists:* D.L.-ethionine. *Glucose antagonists:* D-glucosamine.

FIGURE II.
Antimetabolites used in cancer chemotherapy.

acute leukæmia in children. The vitamin antagonists have shown occasional value, especially in combination with other antimitotic agents.

In addition to interfering with the later phases of nucleoprotein metabolism, research has also been devoted

Substance.	Dosage.	Toxic Signs.
Mustine ..	Intravenous, total 0·4 mg. per kilogram.	Bone-marrow depression with high doses. Maximum effect two to three weeks after last dose.
Thio-TEPA ..	Oral, intravenous, total 1·0 mg. per kilogram.	
"Nitromin" ..	Oral, intravenous, total 20 mg. per kilogram.	
"Degranol" ..	Intravenous, total 10 mg. per kilogram.	
"Myleran" ..	Oral, 2 to 8 mg. per day.	
"Leukeran" ..	Oral, 5 to 10 mg. per day.	

"Sarcolysin", "Novoembichin", "Dopan"—U.S.S.R.
"Melphalen" (CB.3025)—U.K.
"Bayer 158" ("Endoxan"), E.39—Germany.
TEM—U.S.A.

FIGURE III.
Alkylating agents used in cancer chemotherapy.

to developing antimetabolites to both glucose and amino acid metabolism. As an example, D-glucosamine has been shown to compete with glucose, and D.L.ethionine to compete with methionine in the normal metabolic processes of the cell.

Figure III shows examples of the alkylating agents, the first of which, nitrogen mustard (mustine), was introduced in 1946. The first four compounds are those

which are in most general use, and which have a similar palliative value in the lymphomata and solid carcinomata. A controlled cooperative programme recently carried out in the United States of America failed to show any overall advantage of thio-TEPA over mustine when their palliative results were compared, althought thio-TEPA is easier to administer and causes less nausea and vomiting. "Myleran" is still the agent of choice in myeloid leukæmia, and "Leukeran" is valuable in lymphatic leukæmia. The various other alkylating agents named are favoured in their country of origin, but are either less efficacious or more toxic in practice.

The antibiotics (Figure IV) are a comparatively new addition to the field of cancer chemotherapy. Of the

Substance.	Dosage.	Toxic Signs.
"Sanamycin" ..	Intravenous, total, 100 units per kilogram.	Mouth or bowel ulceration, marrow depression.
"Actinomycin D"	Intravenous, total 100 units per kilogram.	
"Carzinophilin"	Intravenous, 5000 units per day.	Marrow depression.

"Mitomycin", "Sarkomycin"—Japan.
"Azaserine"—U.S.A.

FIGURE IV.
Antibiotics used in cancer chemotherapy.

agents named, actinomycin D is probably the most promising; it has been associated with reports of occasional regression in various types of solid cancer, especially embryoma and neuroblastoma in children. Its toxic-therapeutic margin is low. "Sanamycin" is occasionally useful in the lymphomata, and the other antibiotics have yielded occasional successes too. The mode of action of this group is obscure. In addition, there are several other well-established agents whose use is empirical and whose site of action is not clarified (Figure V). Under

Substance.	Dosage.	Toxic Signs.
Urethane ..	Oral, 2 to 4 gm. per day.	Bone-marrow depression with high dosage.
"Colcemid" ..	Oral, 5 to 10 mg. per day.	

FIGURE V.
Miscellaneous drugs used in cancer chemotherapy.

this heading are included various cell poisons, such as urethane, colchicine derivatives (e.g., "Colcemid"), stilbamidine, podophyllin and arsenic. Of this mixed group, urethane has a specific value in the palliative treatment of multiple myeloma.

The high hopes originally held out for the radioactive isotopes (Figure VI) as a therapeutic weapon in the

Substance.	Dosage.	Toxic Signs.
Iodine, I^{131} ..	Oral, intravenous, 100 to 200 mc.	Bone-marrow depression with high doses.
Phosphorus, P^{32}..	Oral, intravenous, 4 to 8 mc.	
Gold, Au^{198} ..	Intracavitary, 50 to 75 mc.	

FIGURE VI.
Radioactive isotopes used in cancer chemotherapy.

treatment of cancer have been somewhat disappointed to date. Nevertheless, radioactive phosphorus is still the best agent in the palliation of polycythæmia vera, and is often useful in the treatment of the lymphomata. Radioactive iodine has some value in the palliative treatment of the rarely encountered well-differentiated adenocarcinoma of the thyroid. Radioactive gold is extensively used in the treatment of serous effusions, but in many people's view is probably no better than the alkylating agents in this respect, although considerably more expensive and difficult to handle.

The steroid hormones (Figure VII) represent a newly developing pharmaceutical field, and have a well-defined place in the palliative treatment of advanced breast and prostatic carcinoma. Ethinylœstradiol is more easily tolerated than stilbœstrol. Fluoxymesterone is markedly less virilizing than the testosterone esters used up till now, and is equally efficacious in the treatment of breast carcinoma. Phosphorylated stilbœstrol ("Honvan") is

Steroid Hormone.	Dosage.	Toxic Signs.
Ethinylœstradiol ..	0·5 to 3 mg. per day.	Feminization.
Fluoxymesterone ("Halotestin").	30 to 40 mg. per day.	Minimal masculinization.
Adrenocortical:		
Prednisolone ..	30 to 50 mg. per day.	Fluid retention, hypertension, diabetes and peptic ulceration, all less than with cortisone.
Triamcinolone ("Kenacort").	40 to 60 mg. per day.	
Methyl prednisolone ("Medrol").	20 to 40 mg. per day.	
Dexamethasone ("Deronil", "Decadron").	4 to 5 mg. per day.	

FIGURE VII.
Steroid hormones used in cancer chemotherapy.

sometimes of value when routine stilbœstrol therapy loses its effect in prostatic cancer. Some of the newer adrenocorticoid hormones cause less side effects than cortisone; but their effect, like that of cortisone, is essentially very short-lived. Newly developed progesterone derivatives are currently being investigated in the treatment of breast cancer.

Figures VIII and IX survey the indications for the various agents described in the treatment of lymphomata and solid carcinomata. Members of the same group are ringed together.

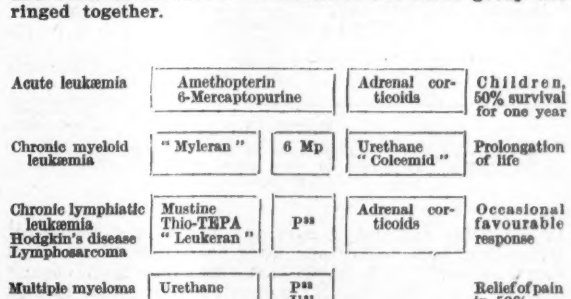

FIGURE VIII.
Indications for chemotherapy in lymphomata in order of choice. Members of the same group are enclosed together.

Resistance to Chemotherapy.

From the use of the compounds mentioned, the palliation in the vast majority of cases is temporary—a matter of months in the case of solid carcinoma, or a few years, at the best, in the case of the lymphomata. This results from the development of resistance in the tumour to the compound used. One possible explanation for this resistance is that, if a step in anabolism is blocked by an antimetabolite, the malignant cell has the capacity to develop an alternative pathway of synthesis. As a result, chemotherapy using a combination of drugs

has been tried in an attempt to block several routes at once, but so far the clinical results are not outstanding.

An alternative explanation for the development of resistance is based on the fact that cancer tissue is known to be composed of a variety of mutant cell types. Each possibly has a different biochemical profile and, therefore, each may respond to a different chemotherapeutic agent. Even if a specific compound is successful in blocking the growth of a particular biotype, the others may proliferate and replace the tumour cell population with a resistant biotype.

New Fields in the Chemotherapy of Cancer.

In the past, the chemotherapy of cancer has been, in the main, a palliative procedure. In recent years, clinical experiments have been carried out to assess the value of chemotherapeutic agents given as a prophylactic measure during or immediately after attempts at radical extirpation of cancer tissue. An impetus was given to the study by the observation of malignant cells both

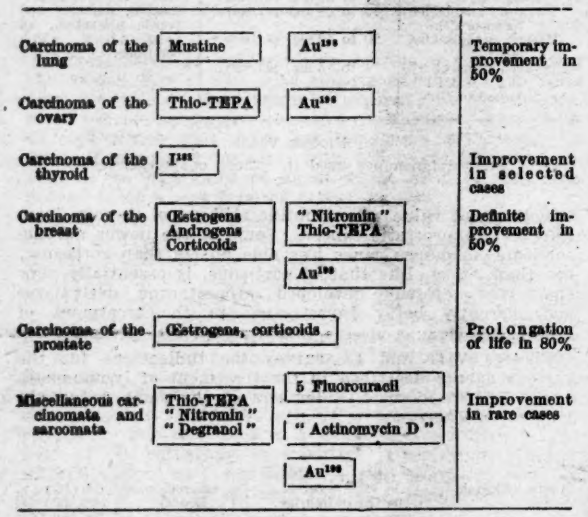

FIGURE IX.

Indications for chemotherapy in solid cancer, in order of choice. Members of the same group are enclosed together.

in the veins draining a part and also in the peripheral circulation, both before and after operations for so-called "early cancer". It is hoped that chemotherapeutic agents may be more effective in destroying such small clumps of cancer cells than large, poorly vascularized masses of tumour tissue. Different alkylating agents, such as nitrogen mustard, thio-TEPA and "Degranol", are being used for this purpose in controlled chemotherapeutic experiments. They are introduced into the portal vein and intraperitoneally during abdominal survery, or into the pleural cavity and intravenously after thoracic surgery. After radical mastectomy the agent has been given intravenously or intramuscularly, and has been used for irrigation under the skin flaps. The results of these controlled series are eagerly awaited.

As has been mentioned above, combinations of antimetabolites have been tried in the hope of achieving a synergistic effect in cancer therapy, and the results of animal experiments are encouraging. Recently, too, much work has been done with high oxygen tension as a means of increasing the radiosensitivity of cancerous tissues relative to normal tissues. Extensive research is proceeding for other technically simpler methods of chemically increasing the radiosensitivity of the malignant cell to irradiation. Both "Synkavit" and "Actinomycin D" have been suggested as having some value in this respect.

Selection of Agents.

The progress made in the earlier days came in the main from selection of drugs on an empirical basis, followed by individual clinical investigations. More recently cooperative programmes by groups of leading institutions have been used to critically analyse and compare some of the agents which came out of these programmes. These trials have compared, on a random basis, two or more drugs which have shown more or less equal promise in pilot trials, because for obvious ethical reasons random selection of patients cannot be carried out with a control series of untreated patients.

A major difficulty in evaluating these trials is that most of the experience in solid cancer chemotherapy has been experienced with patients suffering from disseminated disease. Medical ethics demands that well-established agents, such as surgery or radiation therapy, be used in the early cases. Clinical material consisting of patients with advanced disease is of necessity unrewarding, in that the patient's general condition and the condition of the bone marrow often do not permit maximum doses of chemotherapeutic agents to be given. The blood supply, which needs to be adequate to carry maximum concentrations of the chemotherapeutic agents to the tumour, is often considerably decreased by previous surgery or radiotherapy. In many of these late cases death occurs from intercurrent complications, such as pneumonia or kidney failure, before the effect of chemotherapeutic treatment can be assessed. In addition, a course of treatment must be terminated or modified if the patient's condition urgently demands other types of therapy.

Another problem in clinical chemotherapy trials is that variation of response may occur, owing to the presence of different histological patterns within one category, such as breast carcinoma. This factor is additional to the variation in response due to differences in age and sex groups, and that of endocrine background in hormone-sensitive tumours. One cannot, therefore, conclude that the beneficial response of one patient to a given agent will be duplicated in a second patient with a tumour of the same organ, even if of the same age group and sex.

In an attempt to avoid empiricism and to select agents suitable for each individual patient, pathological and biological control may be used. Suggested approaches include the testing of a chemotherapeutic agent by its effect on the malignant cell count of the peripheral blood. Various groups have now shown the presence of malignant cells in the venous blood draining a tumour-bearing area, and also in the peripheral blood-stream. Increase in the number of circulating malignant cells has been shown to follow surgical manipulation, and decrease in their number to follow chemotherapy. It has been suggested that chemotherapeutic agents may cause a fall in the number of circulating cancer cells within 24 hours, and this should give an index of the chemotherapeutic activity of an agent under trial within a short period, without the need to wait for clinical regression to manifest itself. However, preliminary observations suggest that a hæmatological response to an agent may not always be correlated with a later clinical response.

Another approach is direct testing of chemotherapeutic agents against the patient's own tumour cultured *in vitro*. From clinical observation, different agents appear to have a more or less specific spectrum of activity, but there is wide variation in the response from patient to patient. As a result, various methods of sensitivity tests against chemotherapeutic agents (as employed for bacterial response to antibiotics) have been tried, with the use of tissue cultures of patients' tumours. So far, the results are equivocal, because of the inherent difficulties of tumour culture *in vitro*.

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SCURVY YESTERDAY AND TODAY.[1]

By ELIZABETH TURNER, DAVID PITT
AND
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AUSTRALIA, although a country with a small population, appears to be habitually dedicated to smashing world records. We have the fastest mile runner and some of the fastest swimmers, and now, apparently, we hold the world record for incidence of infantile scurvy — and this in a community with an abundance of fresh food and almost the lowest infant mortality rate in the world.

All over the Western world, where the general standard of nutrition is good, infantile scurvy appears to be on the increase. An increase has been recorded in certain States of the U.S.A., in Canada and in Glasgow, but no other country apparently has such an increase of cases as Australia, and of all the six States, Victoria leads in the number of diagnosed cases. This information has been collected by a *questionnaire* from the radiological departments of five children's hospitals in Australia. This was the only known method of collecting information as to the incidence of the disease as scurvy is not a notifiable disease. The results of this *questionnaire* are set out in Table I.

TABLE I.
Incidence of Scurvy (256 Cases).

City.	1954.	1955.	1956.	1957.	1958. (To August 15.)
Melbourne ..	—	—	40	38	35
Sydney ..	19	18	29	24	12
Brisbane ..	—	1	2	4	—
Adelaide ..	—	5	8	20	—
Perth	—	—	—	1	—

This prevalence of scurvy is quite surprising when we consider the history of the disease and how its prevention was known so long ago. Scurvy is a disease known for several centuries. In the sixteenth century, when long sea journeys were first undertaken beyond the Mediterranean Basin and fresh fruit was therefore not available, scurvy began to occur in sailors. For instance, when James Cartier (1535) travelled to Newfoundland his crew suffered a severe outbreak of scurvy, which was relieved by the consumption of the leaf-juice of the Ameda (Spruce) tree. Shortly after this, medical writers such as Wierus (1567) and John Colbatch (1699) discussed the treatment of scurvy with fresh fruit and plant juices, but this treatment was not firmly established until the well-known work of James Lind who, in 1753, published his "Treatise of Scurvy". This medical book established at least two features: (i) he was the first to propose actual prevention of the disease by the consumption of fruits, and (ii) he described what was probably the first controlled trial in medical treatment. This was an experiment in which he took 12 patients with scurvy on board the *Salisbury* at sea in May, 1747. These were divided into six pairs, each being given different treatment.

> One pair had each two oranges and one lemon given them every day. The consequence was that the most sudden and visible good effects were perceived from the use of the oranges and lemons; one of those who had taken them, being at the end of six days fit for duty. The spots were not indeed at that time quite off his body, nor his gums sound; but without any other medicine than a gargarism of elixir vitriol, he became quite healthy before he came into Plymouth, which was on the 16th June. The other was the best recovered of any in his condition; being now deemed pretty well was appointed nurse to the rest of the sick.

Lind's book has recently been reprinted to celebrate its two-hundredth anniversary. His work was confirmed by Captain Cook (1772-1775), who spent three years in the Southern Seas and prevented scurvy in his crew by giving them diets containing fresh fruits. Thereafter, scurvy was practically eliminated from the Royal Mercantile Marine through the use of such diets and the universal issue of a lemon juice ration.

In the nineteenth century this antiscorbutic knowledge became discredited because outbreaks of scurvy at sea began to recur. This is thought to be due to the substitution of limes for lemons, which have less than half the antiscorbutic power of lemons. During this century also the infectious theory of disease was stimulated by the discoveries of Pasteur, Koch and others, and medical thinking sought rather an infective or a toxic basis for scurvy.

TABLE II.
Pathology of Scurvy.

Abnormal Function.	Site.	Effect.
Dysfunction of intercellular cement.	Vascular endothelium.	Marked hæmorrhagic tendency, positive result to cuff test, prolonged bleeding time.
	Bone matrix.	Decalcification.
	Fibrous tissue.	Loosening of periosteum (bone, teeth), delay in wound healing, ulceration of skin (adults).
Depression of osteoblastic activity.	Regions of rapid bone growth: (i) sternal ends of ribs; (ii) lower part of femur; (iii) upper part of humerus; (iv) tibia, fibula, lower part of radius (in order of frequency).	Lack of osteoid tissue, decalcification in zone of Trümmerfeld, fracture, hæmorrhage and swelling.
Depression of erythropoiesis.	Bone marrow.	Anæmia.
Depression of iron absorption.	Gut.	Anæmia.
Adrenal enlargement, ? dysfunction.	——	? Susceptibility to infection, ? provocation by stress.

It was against this background of medical opinion that the great Antarctic expeditions of the early twentieth century were planned. It is an extraordinary thing, therefore, that although the prevention and cure of scurvy was known so long ago, Scott's first Antarctic expedition subsisted on base rations which contained only 6·4 mg. daily of vitamin C. This was supplemented with vitamin C in seal meat, which was available only at the base at McMurdo Sound, and not on southern journeys towards the South Pole. Outbreaks of scurvy therefore occurred usually on the way home, Shackleton himself being a severe sufferer at this time. In Shackleton's own subsequent expedition a much better diet was available, containing a minimum of 14·6 mg. daily of vitamin C, and it is greatly to his credit that no cases of scurvy occurred. Scott's last expedition was not quite so well supplied with vitamin C, and according to Sir Raymond Priestley, the weakness of early scurvy probably contributed to the failure and death of the Polar party.

During those years scientists such as Eijkmann, Hopkins, Osborne and Mendel were developing the concept of deficiency diseases and vitamins. Further milestones in the history of scurvy were as follows: 1907, experimental scurvy in guinea-pigs (Holst and Fröhlich); 1928,

[1] Presented at a meeting of the Victorian Branch of the British Medical Association at the Royal Children's Hospital, Melbourne, on September 3, 1958.

isolation of "hexuronic acid" from adrenals by Szent-Györgyi; 1932, identified as the antiscorbutic vitamin, renamed ascorbic acid by Szent-Györgyi and Haworth, and synthesized; 1948, experimental scurvy in human volunteers (Medical Research Council, Sheffield) established the minimum protective dose of vitamin C as 10 mg. daily.

With regard to the disease as seen in children, the history of infantile scurvy is fairly recent, being known only since the introduction of artificial feeding for infants over the last 100 years. It was at first confused with rickets, and in 1859 Moëller described it as "acute rickets". However, in 1883, Sir Thomas Barlow distinguished the two diseases and published his classical work on infantile scurvy.

The known functions of vitamin C may be summarized as follows: (i) The metabolism of amino acids, especially phenylalanine and tyrosine. Disturbance of amino-acid metabolism has been shown to occur in guinea-pigs and has been shown in humans by the presence of amino-aciduria. (ii) The formation of collagen. (iii) Erythropoiesis, which is still not fully understood. (iv) There is some experimental evidence to suggest that it is concerned with adrenal function. It was interesting to note in this connexion two clinical features of scurvy, namely, the susceptibility of scorbutic patients to infection, and the provocation of the symptoms of scurvy by stress and hardship; these features were first noted by Lind in the eighteenth century and are seen in patients today.

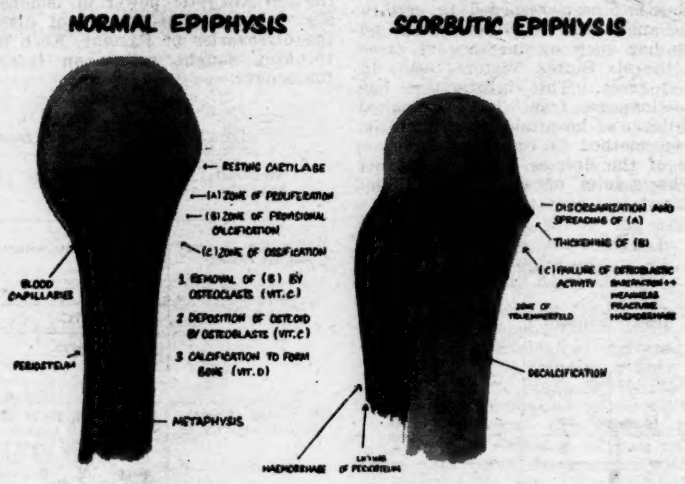

FIGURE I.
Diagrammatic representation of the pathology of scurvy.

Generally speaking, diets which are deficient in one aspect are likely to be deficient in others; this is not so with scurvy, which is clinically a "pure" form of deficiency. The approximate average amount of ascorbic acid (mg. per 100 grammes) found in common foods is as follows: black currants, 150; brussels sprouts, 100; broccoli, 75; orange juice, lemon juice, grapefruit juice, cabbage and scurvy grass, 50; spinach, 30; swedes and turnips, 25; pineapple, 24; tomato, lime juice and onion, 20; potato, 17; French beans and peas, 15; parsnip and kidney, 12; marrow, 10; banana and carrot, 8; apricot, 7; apple and plum, 5.

Ascorbic acid is a crystalline, colourless substance, which can be prepared from glucose; it is easily oxidized and can be destroyed by alkali or by a pH above 7. Its chemical formula is represented in Figure II. Copper acts as a catalyst and contributes to its destruction, but in the absence of oxygen and if in acid ascorbic acid stands heat fairly well.

Providing the pregnant woman has a diet adequate in vitamin C, the infant obtains stores of this *in utero*, which can last him for almost the first five months of his post-natal life — providing his calls for vitamin C from his storage depots are not excessive. Vitamin C is stored in the tissues, especially in the adrenal and other ductless glands; it is in transit in the plasma and white blood cells.

Under stressful circumstances, such as pregnancy, burns, surgery, cold and infection, an increased amount of vitamin C may be necessary; there is undoubtedly a close relationship between ascorbic acid and the function of the pituitary adrenal axis. Ascorbic acid is not directly concerned with the synthesis and release of adreno-cortical hormones, but vitamin C deficiency itself acts as a non-specific stress, giving rise to an increased output of these hormones. Vitamin C in excess is excreted in the urine, but the level in the plasma does not fall to zero, as there appears to be a mechanism for conservation of vitamin C by reduction in the renal blood flow, and thus reduction in glomerular filtration rate.

Human milk contains about 4 to 8 mg. of vitamin C per 100 ml. — almost four times as much as cow's milk, which contains 0·1 to 2·5 mg. per 100 ml.; the calf appears able to synthesize some of its own vitamin C, but the white human races have lost this ability; it has been suggested by Anderson *et alii* (1956) that certain of the Bantu tribes in South Africa may have the faculty for endogenous production of vitamin C.

Vitamin C is necessary for the absorption of iron from the gut, possibly by promoting the reduction of ferric iron in food to ferrous iron. It is also necessary in folic acid metabolism, and is in some way related to B_{12} metabolism; thus anæmia is a common accompaniment of scurvy.

Requirements of ascorbic acid are increased by diarrhœa, which increases fæcal loss, and by achlorhydria, which reduces absorption. As many infants have a low gastric acidity, it is not surprising to find a high incidence of scurvy symptoms beginning in infants within a fortnight of some added stress, such as infection.

The Clinical Features of Scurvy.

The cases occurring recently in Victoria have been investigated by the State Department of Health, and a

preliminary report has been published (Finney, 1958). In this series there were no patients under the age of seven months, the maximum age being about ten months. The sex distribution was approximately equal. There was a seasonal incidence of the disease — the highest number of cases being in the autumn months—March, April, and May; at that time of the year oranges also attained their maximum price.

The history of most of the patients referred to hospital was very similar. About two weeks before being referred the child was noted to become anorexic and grizzly; this frequently followed some episode of infection such as tonsillitis or otitis or a fever, and the subsequent symptoms of scurvy were frequently thought by the parents and sometimes by the physician to be a form of continuation of this stress. The infant resented movement, and screamed if touched — if it had been crawling

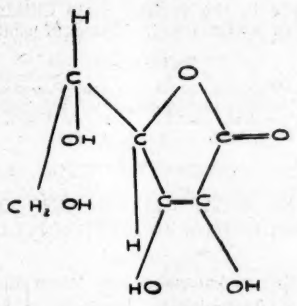

FIGURE II.
Vitamin C (L-ascorbic acid).

or standing it ceased to do so and lay immobile in the typical "pithed-frog" position. There was tenderness and weakness, particularly in the lower limbs of all patients, and some had palpable, tender swellings along the shafts of the long bones. Sometimes for this reason the referring physician had made a tentative diagnosis of osteomyelitis; on several occasions the irritability and immobility had led the physician to make a diagnosis of poliomyelitis or "meningitis with paralysis".

The swollen, hæmorrhagic gum was a useful diagnostic feature, and was present in almost half the cases. Skin hæmorrhages were common, and a slight rise in temperature to 101° F. was not infrequent. Some children had well-marked angulation and swelling at the costochondral junctions — the "scurvy rosary".

Dietary History.

No child in this series had been breast fed for longer than three months; almost half the number had been weaned within the first two weeks on return home from the midwifery hospital. Solid foods had been given in most cases, but often of the tinned variety. Many of the children were said to be faddy and difficult feeders, or to have developed rashes, diarrhœa or vomiting if given orange juice. In most cases no vitamin C had been given, whether in the form of orange juice, ascorbic acid tablets or multi-vitamin preparations; but in three or four instances it appeared from the mother's statement that adequate multi-vitamin preparations had been administered in the correct fashion, and that the bottle had been fresh, not kept in direct sunlight, nor left open to the air. However, in all these cases, response was immediate when therapy was started.

Place in Family.

These children tended to come at the end of a family, generally about fourth. All the previous children had been healthy, and had often received very similar feeding management, according to the mother; the mother tended to become forgetful about the addition of extra vitamins to the feeding of the later children, and because of the pressure of household duties, failed to attend the Infant Welfare Centre as frequently as with her first children. Some mothers had never attended.

At least two-thirds of the infants came from homes of lower socio-economic levels, and many came from areas where new settlements had been made by the Housing Commission as part of the slum clearance plan. About one-third of the mothers of patients were New Australians, who did not understand the English language, and none had any knowledge about the necessity of orange juice or vitamin supplements in infant nutrition.

As the response to treatment with ascorbic acid tablets was so dramatic, several parents were not in the least impressed with the importance of the disease, which after all is a severe form of infantile suffering.

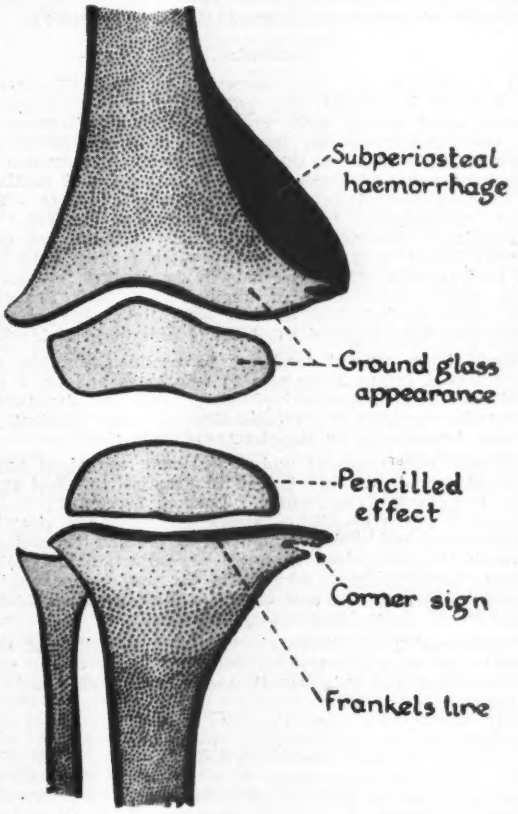

FIGURE III.
Signs of scurvy found on X-ray examination of the knee joint.

X-Ray Findings.

X-ray examinations are an important aid to diagnosis, and the changes to be seen occur at the growing centres in the bones. Thus the ends of the long bones, for example, around the knee joint, usually show the changes most clearly (Figure III). The ground glass appearance of the epiphyses and ends of the long bones, the pencilled line effect around the epiphyses, the "corner sign" due to early fracture and the Frankel's line are the signs most commonly of assistance in confirming one's clinical diagnosis. Occasionally the weakening which results from the destruction beneath the epiphyseal line allows a slipping of the epiphysis. Such an occurrence is liable to mislead the physician into treating the bony injury

and overlooking the underlying scurvy. If, however, a slipped epiphysis is recognized as part of the clinical picture of scurvy, it is found that manipulative reduction is rarely, if ever, required.

Subperiosteal hæmatomata are often extensive in these cases, and it is through a process of calcification and, later, ossification in these hæmatomata that Nature realigns the shaft of the bone with the slipped epiphysis. Subperiosteal hæmatoma is quite a common X-ray finding in a healing scurvy, but it is not often seen in the early stages, at which time the other signs described should enable the clinical diagnosis to be confirmed.

Treatment.

Treatment in this series was by the administration of 50 to 100 mg. of vitamin C two or three times per day, and the response in all cases, except in one case of a patient who died, was dramatic, almost complete freedom from symptoms being achieved in three to four days.

Discussion.

It is believed that the increasing incidence of scurvy in Victoria is a real one, and may be due to many factors, chief among these being (*a*) profound ignorance by the parents of the importance of fresh foods or vitamin supplements in the infant's diet; (*b*) a tendency to carelessness and neglect in the management of feeding of children occurring later in the family; (*c*) the difficulty encountered because of language barriers in attempting to educate New Australians in the proper use of new infant food habits. They often readily abandon old food customs and discontinue breast feeding; although they readily cooperate with sterilizing the milk formula and other foods, they do not appreciate that by so doing they have reduced the infant's ascorbic acid intake.

There is a general tendency to abandon the use of home-cooked infant foods and to rely more and more on sterilized, tinned, pasteurized, autoclaved and denatured foodstuffs, without a corresponding adequate realization of the importance of supplementary practices.

Further advertisement and educational campaigns have been advocated, and are indeed in practice, to offset this ignorance in the community. Leaflets printed in many languages are available to stress the need for vitamin supplements, and their distribution at present lies mainly through the recognized channels of contact, namely, the Infant Welfare Sister, who visits the new infant on its return home from the maternity hospital; more assiduous follow-up of these infants seems desirable.

Consideration should be given to the possibility of the addition of ascorbic acid to fortify milk formulas and infant foods, and this has in some cases been done.

It may be necessary to provide free orange juice, as is the practice in Great Britain. We should suggest also two further steps that may help to reduce the high incidence of scurvy: (i) making scurvy a notifiable disease; (ii) placing multi-vitamin preparations and ascorbic acid on the "free list" (Commonwealth Pharmaceutical Benefits).

By dissemination of knowledge and more strenuous education and guidance of the public, we may be enabled to lose this one world record which we do not desire to retain.

Acknowledgements.

Our thanks in preparing this presentation are due to Dr. Barbara Meredith and Dr. Dorothy Newton, of the Maternal and Child Hygiene Branch of the Victorian Health Department, for access to information about cases of scurvy; to Nicholas Pty. Ltd., for technical help with tables and diagrams; and to the heads of radiological departments in the various State Children's Hospitals for information about the incidence of scurvy.

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STUDIES WITH GLUCOSAMINE ON THE ABSORPTION OF TETRACYCLINE.

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Division of Bacteriology, Institute of Medical and Veterinary Science, Adelaide.

Conflicting claims have been made regarding the value of a variety of substances in their ability to enhance blood levels of tetracycline after oral administration of the antibiotic. Finland (1958) has drawn attention to the difficulty of evaluating many of the published results, while Kunin *et alii* (1958) state that it has yet to be proved that any of the currently available preparations produce clinically important enhancement of absorption or activity under the conditions encountered in the treatment of patients. The present series of experiments were carried out to determine the value of glucosamine (2-amino-d-glucose) in raising serum levels of tetracycline in normal volunteers. Welch *et alii* (1958) found that glucosamine produced definitely higher antibiotic serum concentrations, while Carlozzi (1958) demonstrated the superiority of glucosamine over citric acid when combined with tetra-

Table I.

Subject.	Weight. (Pounds.)	Series I (Fasting).												Series II (Standard Meal).					
		Tetracycline HCl.				+125 mg. Glucosamine.				+250 mg. Glucosamine.				Tetracycline HCl.			+250 mg. Glucosamine.		
		2 Hours.	3 Hours.	6 Hours.	8 Hours.	2 Hours.	3 Hours.	6 Hours.	8 Hours.	2 Hours.	3 Hours.	6 Hours.	8 Hours.	2 Hours.	3 Hours.	6 Hours.	2 Hours.	3 Hours.	6 Hours.
1	170	0·8	0·78	0·6	0·2	2·84	2·0	1·88	1·44	1·68	2·16	1·80	1·4	0·64	0·58	0·44	0·60	0·70	0·50
2	161	1·36	1·04	0·84	0·58	1·0	1·32	0·58	0·58	1·12	0·96	0·64	0·56	0·35	0·25	—	1·20	1·00	0·64
3	154	1·50	1·48	1·32	1·0	1·96	1·56	1·20	0·76	1·92	2·20	1·32	1·02	0·80	0·80	0·48	0·82	0·80	0·68
4	150	1·80	1·60	1·36	1·0	1·52	1·40	1·40	1·14	1·04	0·90	0·60	0·52	0·76	0·68	0·44	0·60	0·56	0·46
5	100	2·16	2·60	1·80	1·0	1·88	2·32	2·0	2·0	1·80	2·96	2·0	1·20	0·82	1·04	0·84	1·52	1·60	0·92
6	104	2·0	1·76	1·12	0·74	2·72	2·72	1·96	1·80	1·04	0·92	0·58	0·52	0·80	0·74	0·58	1·00	0·84	0·56
7	182	1·56	1·36	0·96	0·66	2·36	1·36	1·16	0·78	1·52	1·80	1·48	1·20	0·62	0·50	0·44	0·80	0·84	0·54
8	154	—	1·56	0·78	1·64	1·20	1·02	1·20	0·80	1·32	1·08	0·72	0·67	0·68	0·50	0·23	0·66	1·04	0·60
9	140	2·60	1·96	2·16	1·08	4·0	2·44	2·80	1·64	1·96	2·76	2·40	1·80	1·60	1·80	1·80	1·80	1·64	1·00
10	196	1·40	1·20	1·08	0·72	1·2	1·12	0·76	0·58	1·60	1·92	1·44	1·04	0·70	0·70	0·48	0·72	1·24	0·72
11	190	1·52	1·36	—	0·96	1·2	1·40	1·12	1·08	0·6	0·88	0·80	0·70	0·80	0·72	0·51	0·84	1·16	0·80
12	154	3·25	2·04	—	1·68	3·4	3·36	2·72	2·80	2·8	2·40	2·20	1·56	1·16	1·00	0·76	2·24	1·88	1·44
Mean serum levels ..		1·84	1·56	1·20	0·85	2·10	1·91	1·48	1·28	1·53	1·74	1·33	1·01	0·81	0·77	0·52	1·06	1·10	0·78

cycline. However, these results have not been confirmed by Kunin *et alii* (1958).

Materials and Methods.

Two series of experiments were performed.

Twelve healthy volunteers between the ages of 16 and 60 years were selected. Capsules of tetracycline hydrochloride were used, containing 250 mg. of antibiotic, 108 mg. of corn-starch and no calcium. Glucosamine was administered in separate capsules containing either 125 mg. or 250 mg. Serum tetracycline levels were determined by the cylinder-plate diffusion method described by Grove and Randall (1955).

In the first series of experiments, a dose of 250 mg. of tetracycline was administered to the volunteers after overnight fasting. Serum levels were assayed two, three, six and eight hours after administration. A light meal was taken after the first venepuncture, and normal meals were taken thereafter. The experiment was repeated a week later with the addition of 125 mg. of glucosamine, and finally with the addition of 250 mg. of glucosamine.

In the second series, volunteers received 250 mg. of tetracycline three hours after a standard breakfast. This consisted of cereal, boiled egg, toast and tea or coffee. Serum levels were determined at two, three and six hours after administration. The experiment was later repeated with the addition of 250 mg. of glucosamine.

Results.

The individual serum levels obtained are shown in Table I and the mean levels are presented graphically in Figure I. The effect of food on the serum levels of an

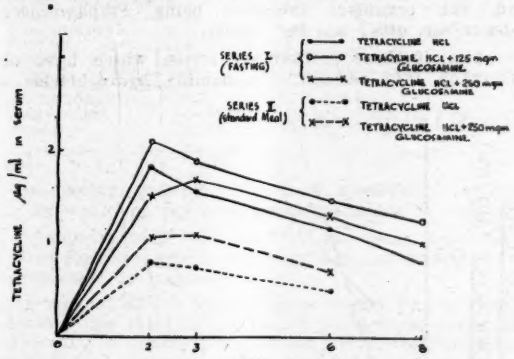

FIGURE I.

orally administered antibiotic is strikingly demonstrated. Bullen (1958) has shown that when 250 mg. of tetracycline are given 30 minutes after a meal, levels not exceeding 0·3 μg. per millilitre are obtained. In the present series, with a three-hour interval between food and administration of the antibiotic, the levels are still significantly lower than those obtained after fasting. In neither series does the addition of glucosamine increase the serum levels of tetracycline by a statistically significant amount ($p>0·05$).

Summary.

Twelve volunteers received single doses of tetracycline hydrochloride alone and in combination with glucosamine.

A standard meal taken before the experiments reduced the serum levels of tetracycline as compared with the fasting series, but in neither series did the addition of glucosamine result in any significant enhancement.

Acknowledgements.

This work was carried out with the assistance of a grant made by Pfizer Pty. Ltd. Our thanks are due to Dr. Keith Gollan, medical director, for supplies of tetracycline hydrochloride and glucosamine. We also wish to thank members of the staff of the Institute of Medical and Veterinary Science, who volunteered to take part in the experiment.

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STUDIES ON THE USE OF ENHANCING AGENTS TO PROMOTE ABSORPTION OF TETRACYCLINE ADMINISTERED ORALLY.

By MONICA BULLEN, JUDITH A. RHEUBEN, B.Sc.,[1] and E. F. THOMSON,

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In view of the interest at present being shown in the use of enhancing agents as vehicles in the commercial preparation of tetracycline capsules, it was decided to make a small study, comparing the absorption of tetracycline hydrochloride with corn starch as filler — i.e., tetracycline[2] alone — with the absorption of tetracycline hydrochloride and hexametaphosphate, tetracycline hydrochloride and citric acid, and tetracycline hydrochloride and glucosamine hydrochloride.

Welch *et alii* (1958) came to the conclusion that the combination of tetracycline and glucosamine was superior to commercially available "Tetracyn" (tetracycline hydrochloride). However, in their study the capsules were administered three to three and a half hours after one meal and half an hour to one hour before the next, so that the action of glucosamine itself was not known to be entirely free from enhancement due to an empty or nearly empty stomach.

Carlozzi (1958) showed that when tetracycline hydrochloride was given to fasting patients, very high blood levels were obtained, and these levels were not raised when glucosamine was added. Anderson (1958) confirmed this work with regard to fasting subjects; but with some subjects under Welch's conditions (i.e., semi-fasting patients), although he obtained comparatively higher absorption levels with "Tetracyn" plus glucosamine than with "Tetracyn" alone, the difference was not statistically significant. However, absolute serum levels of "Tetracyn" alone and of "Tetracyn" with glucosamine were both considerably less in these semi-fasting patients than readings obtained in fasting patients.

As so many drugs are administered "t.d.s. and nocte" with meals as the reference point, it was decided that this study should relate to absorption when food was present in the stomach and intestine. Accordingly, the drugs were administered a quarter of an hour after a normal breakfast (cereal, fruit, main course, toast, tea). Blood samples were taken before ingestion and at two, three and six hours after ingestion, lunch being taken at the normal time (about four hours after ingestion).

Method.

The substances under study were as follows: (1) "Tetracyn", commercially available capsules containing 250 mg. of tetracycline hydrochloride with corn-starch filler;

[1] Supported by a grant from Pfizer Corporation.

[2] Tetracycline hydrochloride marketed by Pfizer Corporation.

TABLE I.

Serum Concentration of Tetracycline Before, and Two, Three and Six Hours After, Administration of Drugs (Microgrammes per Millilitre).[1]

Test Substance and Relation to Time of Ingestion.	Subject Number.											Average.	Range.
	1	2	3	4	5	6	7	8	9	10	11		
"Tetracyn":													
Before	0·077	0·072	0·072	0·022	0·034	0·074	0·08	0·084	0·094	0·108	0·058	0·07	0·022–0·108
After 2 hours	0·169	0·14	0·239	0·07	0·291	0·278	0·448	0·248	0·304	0·16	0·17	0·228	0·07 –0·448
After 3 hours	0·054	0·06	0·068	0·064	0·069	0·092	0·13	0·045	0·13	0·037	0·11	0·078	0·037–0·13
After 6 hours	0·05	0·08	0·024	0·046	0·0375	0·07	0·013	0·06	0·128	0·064	0·048	0·056	0·013–0·128
"Tetracyn V":													
Before	0·006	0·01	—	—	—	—	—	—	—	—	—	—	—
After 2 hours	0·14	0·026	0·0125	0·12	Ni	0·02	0·75	0·024	0·051	0·024	Ni	0·106	0·0125–0·75
After 3 hours	Absent	0·13	0·028	0·089	0·071	0·119	0·02	0·049	0·077	0·23	0·19	0·1	0·02 –0·23
After 6 hours	0·024	0·089	Absent	0·081	0·026	0·085	0·08	0·02	0·075	0·14	Absent	0·069	0·02 –0·14
"Tetracyn" plus glucosamine hydrochloride:													
Before	—	—	—	—	—	—	—	—	—	—	—	—	—
After 2 hours	0·3	0·4	0·35	0·36	0·24	0·22	0·25	0·46	0·36	0·52	0·26	0·338	0·22 –0·52
After 3 hours	0·45	0·31	0·35	0·25	0·25	0·12	0·43	0·40	0·41	0·30	0·31	0·325	0·12 –0·45
After 6 hours	0·045	0·094	0·036	Absent	0·054	0·05	0·09	0·06	0·04	0·065	0·13	0·066	0·036–0·13
"Tetracyn" plus citric acid:													
Before	—	—	—	—	—	Absent	—	—	—	—	—	—	—
After 2 hours	0·144	0·058	0·11	0·08	0·19	—	0·091	0·079	Absent	0·08	0·059	0·099	0·059–0·144
After 3 hours	0·02	0·03	0·012	0·08	0·018	—	0·052	0·03	0·01	0·01	0·01	0·027	0·01 –0·08
After 6 hours	0·01	0·01	0·05	0·07	0·08	—	0·01	0·05	—	0·01	—	0·036	0·0 –0·08

[1] Ni = no area of inhibition.

(ii) "Tetracyn V", commercially available capsules containing 250 mg. of tetracycline hydrochloride with added sodium hexametaphosphate and corn-starch filler; (iii) "Tetracyn" with glucosamine, the capsules as in the first study, plus capsules containing 250 mg. of glucosamine hydrochloride with corn-starch filler; (iv) "Tetracyn" with citric acid, the capsules as in the first study, plus capsules containing 250 mg. of citric acid and corn-starch filler.

All four studies followed a similar pattern. The 11 subjects were healthy adults aged between 20 and 30 years, and comprised nine males and two females. The capsules were administered after breakfast (*vide supra*), and 8 to 10 ml. of venous blood were withdrawn aseptically before, and at two, three and six hours after, ingestion. The blood was allowed to clot, and after it had been centrifuged for five minutes at 4000 r.p.m., the serum was removed and stored in the frozen state at −20° C. until assayed. Control specimens were withdrawn the day before each test. At least six days elapsed between all tests. With tetracycline hydrochloride as the standard of comparison and *Bacillus cereus* var. *mycoides* as the assay organism, the concentrations of the tetracycline in the sera were determined by the cylinder plate assay technique (Grove and Randall, 1955).

Results.

Table I shows the individual serum concentrations before, and two, three and six hours after, ingestion of the drugs. The average serum concentrations are shown graphically in Figure I.

The average serum concentrations in percentages are as shown in Table II.

Comments.

We have been unable to find an entirely satisfactory explanation for the inhibitory levels of the sera at the start of the series. This blood was withdrawn prior to the ingestion of any capsules at all, although Subjects 1 and 2 again gave inhibition prior to the second study, six days after the first. Because of the fact that low readings had been obtained in previous work, undiluted serum was used during this series, and the inhibitory levels would appear to be due to globulins. Why they were not seen during the later studies it is hard to say, apart from natural variation. No technical error has been evident. It is interesting to note that Subject 2, who showed a preliminary inhibitory level equivalent to 0·072 microgramme of tetracycline hydrochloride per millilitre and a second level equivalent to 0·01 microgramme per millilitre, was also a subject in another series of studies,[1] when a preliminary level equivalent to 0·28 microgramme of oleandomycin phosphate per millilitre was found, the organism inhibited being *Staphylococcus pyogenes* var. *albus* No. PCI—1200.

In spite of these preliminary levels, which have not been taken into account, glucosamine hydrochloride is

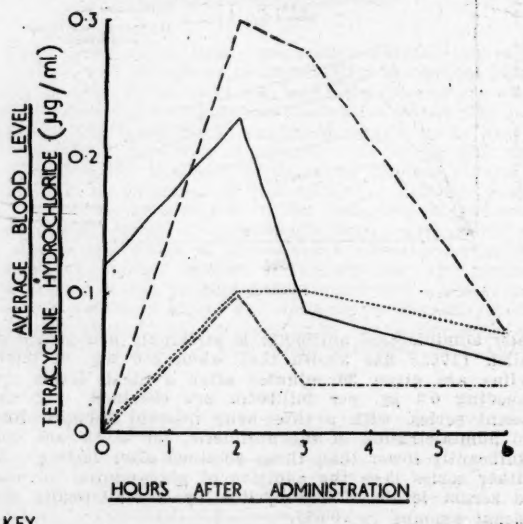

FIGURE I.

associated with at least a twofold increase in absorption over each of the other additives and over tetracycline alone. This difference, however, is not statistically significant. The consistently low levels of antibiotic concentration in serum, shown by some patients during oral therapy, are evident also in our results. A similar phenomenon was noted during a series of studies on

[1] Unpublished study, Pfizer grant.

triacetyl oleandomycin absorption, when one subject failed to show a rise in serum level until 22 hours after withdrawal of the control blood, during which time five capsules, each containing 150 milligrammes of the drug, had been administered at evenly spaced intervals.[1]

It is important to note that peak serum levels were of the order of 0·1 to 0·3 μg. (these subjects had just had breakfast), whereas in the Welch series (capsules given three and a half hours after breakfast) the blood levels were of the order of 0·6 to 0·8 μg. Finally, in the fasting patients of Carlozzi and Anderson, the peak levels were of the order of 1·8 to 2·0 μg. Several inferences and queries may be drawn from these findings:

1. In our series, although absorption is twofold with glucosamine, the figures are so low that they do not matter, and also the margin of error at these low readings is such that they are of no significance.

TABLE II.

Substance Tested.	Concentration (Hours after Ingestion).			Total.
	2	3		
Tetracycline	100%	100%	100%	300%
Tetracycline with citric acid:				
Concentration	43·0%	38·4%	80·0%	161·4%
Decrease	57·0%	61·6%	20·0%	—
Tetracycline with hexametaphosphate:				
Concentration	46·0%	128·2%	140%	314·2%
Decrease	54·0%	—	—	—
Increase	—	28·2%	40·2%	—
Tetracycline with glucosamine hydrochloride:				
Concentration	148·0%	410·2%	132·0%	690·2%
Increase	48·0%	310·2%	32·0%	—

2. In fasting patients, in whom absorption is very great, as would be expected, no enhancement is obtained.

3. It appears that food itself is the great depressant, and with such low serum concentrations any enhancement under fivefold is insignificant.

4. In view of all the above studies, should we completely reorientate our thinking in regard to the importance of blood levels in therapy, as patients still respond when antibiotics are administered at mealtime?

5. It would seem that the important factor in antibiotic levels is the depressant one, and in view of this it is suggested that enhancing agents may not be of any practical therapeutic value.

6. In view of the great difference between serum concentrations in fasting and non-fasting subjects, should more attention be paid to the relationship between time of administration of the drug and meals?

7. Is the incidence of low serum levels relevant to the emergence of resistant organisms?

Summary.

The absorption by the intestinal canal of tetracycline hydrochloride when given alone, or with added hexametaphosphate, or glucosamine hydrochloride, or citric acid, was studied in 11 subjects. Food had been taken a quarter of an hour before ingestion of the drug.

Glucosamine was associated with serum levels double that of tetracycline alone, tetracycline plus metaphosphate with similar levels to tetracycline, and citric acid with levels approximately half that of tetracycline alone. However, all levels were so low that they were of no practical significance, and the scale of the study is considered too small for statistical conclusions to be drawn.

[1] Unpublished study, Pfizer grant.

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Reports of Cases.

NON-SPECIFIC PERICARDITIS: A FATAL CASE.

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FATAL intrapericardial hæmorrhage with cardiac tamponade is an uncommon complication of non-specific pericarditis: only four such instances were cited by Goodman (1958) in a recent article. Two of these patients (McCord and Taguchi, 1951; Goodman, 1958), who developed cardiac tamponade on the fourteenth or fifteenth hospital day and died within 24 hours, had received anticoagulant therapy after the diagnosis of myocardial infarction had been made. The following report concerns a patient who ran a similar clinical course and presented the same type of pericardial lesions.

Clinical Record.

The patient was a mechanic, aged 47 years, who had been in good health until 10 days before his admission to the Royal Adelaide Hospital on April 5, 1958. At that time he developed a temperature of 103° F. associated with shivering and general malaise. His condition improved after three days in bed, and he then returned to work. Four days prior to his admission to hospital he complained of a severe constricting retrosternal pain, which came on suddenly during the night and radiated to the left side of the chest and shoulder; this pain was relieved only by an injection of morphine. For the next three days the patient had mild continuous chest pain, which was aggravated by respiration and exertion. There was no cough, breathlessness or ankle swelling. Rheumatism at the age of 14 years had been the only previous major illness.

On his admission to hospital, his temperature was 97° F., his pulse rate was 88 per minute and regular, and his blood pressure was 170/110 mm. of mercury. He was slightly cyanosed, but not distressed. The jugular vein was distended for one inch above the clavicle. The apex beat was felt in the fifth left intercostal space 3·5 inches from the mid-sternal line; a soft systolic bruit was audible over the mitral area. Reduced air entry and crepitations were noted at both lung bases, and full respiration was limited by pain. No other significant abnormalities were found on physical examination.

An electrocardiogram on the day of his admission showed upward convexity of the S–T segments in leads I and aVL; a chest skiagram revealed an opaque area in the basal segments of the lower lobe of the left lung suggesting collapse, and an abnormal shadow in the right lower zone.

The patient was thought to have had a myocardial infarction; he was treated with "Dindevan", sedation and complete bed rest. The pain disappeared after five days, and he then remained well for one week.

The serum glutamic oxalacetic transaminase (S.G.O.T.) estimation three days after admission was 175K units (a

modification of the method described by Sall, Richards, Harrison and Myerson, 1957, being used). The hæmoglobin value was 13·6 gm. per 100 ml. (86% Sahli), and the white cell count 18,000 per cubic millimetre with 73% polymorphs, 22% lymphocytes, 3% monocytes and 1% eosinophils. Serial prothrombin estimations were made, and a level between 18% and 22% was maintained throughout the patient's illness. Electrocardiograms revealed no further changes until the tenth hospital day, when the tracing showed isoelectric S–T segments with *T* wave inversion in the antero-lateral leads.

On the fifteenth hospital day the patient suddenly became shocked, with associated weakness and profuse sweating. His blood pressure fell to 130/100 mm. of mercury. Further infarction was postulated to explain the clinical picture. The following day an electrocardiogram showed *T* wave inversion in leads V5 and V6, but no other changes, and a chest X-ray film revealed an enlarged cardiac shadow suggesting pericardial effusion, while the previously noted basal opaque areas had resolved. His condition gradually deteriorated, and he died 18 days after admission. The last two days of his illness were marked by severe attacks of abdominal and left shoulder pain. During this period the hæmoglobin value fell to 62% (Sahli), and he was given a transfusion of two pints of blood.

Autopsy.

An autopsy was performed 24 hours after death. The pericardial sac contained approximately 600 ml. of blood and several large clots. Both layers of pericardium were thickened and the surfaces covered by adherent fibrinous exudate. The heart weighed 350 grammes. Careful inspection of the ventricles failed to show evidence of myocardial infarction, and the valves were normal. The coronary arteries were patent and showed only slight atheroma. Both lungs were congested. The liver weighed 2050 grammes, and examination of the cut surface revealed prominent lobular markings.

Histological examination of the pericardium showed extensive formation of vascular granulation tissue. The newly-formed vessels were dilated and filled with blood, and scattered throughout the tissue were areas of recent hæmorrhage. Among the granulations were a few inflammatory cells, macrophages and plasma cells. The superficial surface of the epicardial granulations was covered with a layer of fibrin and red cells. There was no inflammatory infiltration of the underlying myocardium.

Comment.

The differences in symptomatology, physical findings and electrocardiographic findings between non-specific pericarditis and myocardial infarction have been reviewed elsewhere (Barnes and Burchell, 1942; Goyette, 1953). Nevertheless, the distinction in individual cases remains difficult. In this case the initial symptoms of fever and general malaise, the constant relationship of chest pain to respiration and the absence of *QRS* changes in the electrocardiogram were, in retrospect, all suggestive of pericarditis.

Gutteridge and McKean (1958) reviewed the diagnostic value of S.G.O.T. estimation in myocardial infarction. It was generally found that the level of S.G.O.T. reached a maximum between 12 and 48 hours after the onset of symptoms, and returned to normal within three to six days. Recently, Kalmansohn and Kalmansohn (1958) reported a rise in the level of S.G.O.T. in five cases of non-specific pericarditis. These observations, together with the high level in this case, suggest that a single raised reading of S.G.O.T. is of no great help in differentiating between cardiac infarction and pericarditis. However, the figures obtained on serial estimations of S.G.O.T. in the latter condition apparently differ from the pattern observed in myocardial infarction (Roman, 1958, personal communication).

Summary.

A fatal case of non-specific pericarditis associated with anticoagulant therapy is presented. Death resulted from cardiac tamponade due to massive intrapericardial hæmorrhage. Mention is made of the rise in S.G.O.T. level in this condition.

Acknowledgements.

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PRIMARY VENEREAL HERPES SIMPLEX INFECTION IN THE MALE.

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THE following case is reported because it is an unusual type of primary infection with the herpes simplex virus and also because the primary dermal infection was accompanied by infection of the central nervous system.

Unna (1883) described genital herpes as a venereal disease, and his view was supported by Sharlit (1940); but the first case of primary herpes vulvo-vaginitis to be proven virologically was described by Slavin and Gavitt (1946). We believe that the following is the first reported case of venereal primary penile herpes simplex infection in an adult to be confirmed by virological methods.

The herpes simplex virus also has the capacity to attack the central nervous system, and it may cause rapidly fatal encephalitis, particularly in children and sometimes in young adults. It may cause benign aseptic meningitis; but its relative importance as one of the ætiological factors in this syndrome is not yet clear.

Afzelius Alm (1951) described a large number of cases of aseptic meningitis, of which six were shown to be due to the herpes simplex virus. One of these patients had a penile eruption three weeks prior to developing a headache, but the virus was not isolated, and we can find no other record in the literature of a similar clinical syndrome.

Clinical Features.

A male, aged 23 years, was admitted to the Royal Adelaide Hospital on January 10, 1958. Seventeen days previously he had had intercourse with a casual acquaintance. Seven days later he developed a "blister" on the

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penis, round which smaller vesicles rapidly developed. There was no urethral discharge, but he was given a series of penicillin injections during the week before his admission to hospital. During this period he had occasional frontal headaches; some 30 hours before he was admitted to hospital these had become much more severe and continuous, and the patient began to vomit and had increasingly frequent rigors. A furuncle on the left side of the neck discharged just before he was examined in the hospital, and this partly relieved the headache and rigors. He had not previously had "cold sores" or any other evidence of herpetic infection.

Examination of the patient revealed him to have a temperature of 102° F. and moderate tachycardia. He was fully conscious and cooperative, complaining of severe headache, a stiff neck and photophobia. The optic fundi were normal, and examination of the nervous system revealed no abnormality except neck stiffness and diminished knee jerks. The mouth, fauces and pharynx were normal, examination of the chest revealed no abnormality, and the spleen was not palpable. Behind the left ear was a discharging furuncle. On the body of the penis, with a few crusts on the glans, were herpetic vesicles of varying ages. There was bilateral inguinal lymph gland enlargement.

A lumbar puncture was performed and examination of the cerebro-spinal fluid showed a lymphocytic pleocytosis. After the lumbar puncture the headache lessened and over the next 11 days, during which he was given penicillin, the patient lost most of his symptoms. He was then discharged to rest at home (January 21) and returned for further investigations at intervals until February 18, when, after some weeks of malaise and tiredness, he returned to work.

Investigations performed included a blood examination, which showed the hæmoglobin value to be 15·7 grammes per 100 ml. and the white cells to number 10,200 per cubic millimetre. Culture of the blood produced no growth of pathogenic microorganisms, and a coagulase-positive staphylococcus was isolated from the furuncle. The results of examination of successive specimens of cerebro-spinal fluid are shown in Table I. Wassermann, Kline and Kahn tests of the blood on January 16 and February 18, 1958, gave negative results.

When the patient was examined some four months after his discharge from hospital, he said that he had suffered from recurrent penile herpetic eruptions, which, however, caused little inconvenience. Two weeks previously he had developed a "cold", and with this had had a headache almost as severe as that of the original illness, together with a marked exacerbation of the cutaneous eruption. Both symptoms had regressed considerabty when the patient was examined, and lumbar puncture did not then appear to be justifiable.

Virus Laboratory Studies.

Fluid from a fresh vesicle on the shaft of the penis was collected on a swab, which was extracted in 2 ml. of 10% rabbit serum saline containing penicillin and streptomycin. This extract was inoculated intraperitoneally in new-born mice and intracerebrally in mice three weeks old. All mice were dead or ill by the fourth day after inoculation. The mice three weeks old showed signs of encephalitis. A suspension of the brains of three of these mice was found to be sterile on cultural examination, but infective to a further group of mice three weeks old when inoculated intracerebrally. One more intracerebral passage was carried out, and the second-passage brain material was tested for neutralization by herpes simplex antiserum. The neutralization test used was that described by Scott (1948).

In this test the $L.D._{50}$ (Reed and Muench, 1938) of the mouse brain suspension with normal rabbit serum was $10^{-9\cdot7}$ and the $L.D._{50}$ of the same brain suspension with herpes simplex antiserum was 10^{-1}. Therefore the neutralizing index of the antiserum against the isolated virus was $10^{8\cdot7}$. This neutralization index is within the range $10^{8\cdot6}$ to $10^{8\cdot7}$, which we have observed with this antiserum in previous experiments on freshly isolated strains of herpes simplex isolated from clinically typical lesions.

Attempts were made to isolate a virus from the cerebro-spinal fluid by inoculation of the portions of specimens collected on January 10 and January 11, 1958, into new-born mice intraperitoneally and mice three weeks old intracerebrally. A total of 31 mice were inoculated, but no virus was isolated.

Specimens of serum from the patient taken on January 10 and February 4, 1958, were tested for neutralizing antibodies to the herpes simplex virus, again by the method described by Scott (1948). The test virus was the Cr. strain, which had been previously isolated in this laboratory from the liver tissue of a subject dead of neonatal visceral herpes. The results are shown in Table II. They indicate that there was a 22-fold rise in antibody in the second specimen. The antibody level in the first specimen is very small, and suggests that the titre was just beginning to rise (the serum was collected 18 days after infection was initiated), and that the infection was a primary one.

Discussion.

Burnet (1945) showed that approximately 90% of the population were infected with the herpes simplex virus during childhood and that the proportion of infected individuals did not change significantly in adulthood; this suggests that after childhood there is a relative resistance to primary infection. Thus only 10% of adults are not already immune to the herpes simplex virus, and these seem to be constitutionally resistant to infection. This may explain why venereal herpes simplex infection has been so rarely reported, although it may seem that the possibility of such infection is fairly frequent.

Unna (1883) stated that genital herpes was a venereal disease, because he saw a high incidence of vulval herpes in prostitutes. Sharlit (1940) described primary penile herpes simplex infection in a middle-aged man, who developed herpetic vesicles and local lymphadenitis five days after intercourse with a stranger. His regular partner then developed vulval herpes five days after the last sexual contact, which was on the day when he first observed vesicles, and both later suffered from irregular recurrent genital herpes. Sharlit also quoted a verbal communication from Rein, who observed a case of penile herpes acquired from a patient known to have vulval herpes. Sharlit's cases were based on clinical diagnosis, the characteristic vesicles and the fact that his patients had never previously suffered from any other form of herpetic lesions. The incubation period of

TABLE I.
Cerebro-Spinal Fluid Findings.

Date (1958).	Cells per Cubic Millimetre.			Protein. (Mg. per 100 Ml.)	Sugar. (Mg. per 100 Ml.)	Chloride. (Mg. per 100 Ml.)
	Erythrocytes.	Polymorphs.	Lymphocytes.			
January 10	650	20	400	70	75	646
January 11	130	3	310	30	57	510
January 17	50	3	240	40	64	706
January 28	15,000	—	60	30	55	753

seven days for the skin vesicles in our case is of the same order as that suggested by Sharlit.

The herpes simplex virus has been isolated from the brain tissue of children dead of encephalitis, in whom characteristic intranuclear inclusions were demonstrated histologically (Smith *et alii*, 1941; Whitman *et alii*, 1946). It has also been reported to cause "aseptic" meningitis. Armstrong (1943) described the first proven cases when he isolated the herpes simplex virus from the cerebro-spinal fluid of a youth, aged 15 years, suffering from acute aseptic meningitis, which appeared to have been benign by clinical assessment during convalescence. Armstrong also demonstrated the absence of herpes simplex antibodies in the acute phase serum and its presence in the convalescent specimen.

Afzelius Alm (1951) studied a large series of patients with aseptic meningitis admitted to hospital in Gothenburg. During a five-year period, six patients out of 210 tested were shown, by the appearance of serum antibodies in convalescence, to have been infected by the herpes simplex virus. He was able to isolate the virus from the cerebro-spinal fluid of only one patient. Adair *et alii* (1953) stated, on similar serological grounds, that 5% of

TABLE II.

Result of Tests for Neutralizing Antibodies to Herpes Simplex Virus with Patient's Serum.

Test.	LD_{50} (0·03 Ml.) (Reed and Muench, 1938.)	Neutralizing Index of Serum.
Herpes virus *plus* normal rabbit serum	$10^{-4\cdot2}$	—
Herpes virus *plus* acute phase serum (January 10)	$10^{-3\cdot72}$	$10^{0\cdot48} = 2:8$
Herpes virus *plus* convalescent phase serum (February 2)	$10^{-5\cdot4}$	$10^{1\cdot2} = 63$

a series of 114 cases of aseptic meningitis which they investigated in the United States of America were caused by the herpes simplex virus. Gear and Bayer (1955) showed that two cases of aseptic meningitis were caused by the herpes simplex virus in a series of 200 cases which they investigated in Johannesburg.

We believe the aseptic meningitis in our patient was due to the herpes simplex virus, although we did not isolate the virus from the acute phase cerebro-spinal fluid. In the three investigations of herpes already mentioned, the virus was isolated on only two occasions in 15 cases of serologically proven herpes simplex infection. The significance of the presence of herpes simplex virus in the cerebro-spinal fluid is further complicated by the isolation of the virus on three occasions by Flexner and Amos (1925) and by Zurukzoglu (1937), from people who were not suffering from acute central nervous system illness at the time of lumbar puncture. In most of the reported cases, however, there is a pleocytosis in the cerebro-spinal fluid in the range of 300 to 500 per cubic millimetre, and the cells are predominantly mononuclear, although in several cases there is a high proportion of polymorphs. In some of those in which a series of examinations has been performed there is also a persistent increase in cells, despite minimal clinical involvement — a point well illustrated by the case presented. A further possibility which we cannot at present disprove is that the nervous involvement is not due to direct infection by the virus, but is a form of acute disseminated encephalomyelitis as described by Miller *et alii* (1957).

It is commonly believed that, after primary infection in childhood which is accompanied by varying degrees of constitutional disturbance, the herpes simplex virus persists in the latent state in the epidermal cells at the site of primary infection. The recurrent herpetic eruptions at these sites are due to activation of the latent virus by stress.

The recurrence of severe headache with a recurrence of genital herpes in our patient is interesting. If this was a symptom of further central nervous system irritation, it is contrary to the general belief, expressed by Stoker (1957), that central nervous system infection by the herpes simplex virus does not recur in man. However, it has been proved that herpes simplex infection of the central nervous system in rabbits can recur. Good and Campbell (1948) were able to reactivate herpes simplex in the brains of rabbits which had recovered from herpes simplex encephalitis, using anaphylactic shock as the provoking stress. They were able to recover infectious herpes simplex virus from the brains of rabbits which died during the precipitated encephalitis.

Summary.

A case of primary herpes progenitalis in an adult male is described. This was a venereal infection, and the herpes simplex virus was isolated from a penile vesicle. There was a 22-fold rise in titre of neutralizing antibody to the herpes simplex virus between the acute and convalescent phase serum specimens. The genital infection was followed by clinically typical benign aseptic meningitis. This may have been due to blood-stream spread of the herpes simplex virus prior to the development of specific antibodies.

Acknowledgements.

We wish to thank Dr. J. H. Hayward, under whose care the patient was admitted to the Royal Adelaide Hospital, for permission to publish this case, and Mr. Brian Moore for technical assistance.

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Reviews.

Injuries and Surgical Diseases of the Ischium. By Henry Milch, M.D.; 1958. New York: A Hoeber-Harper Book. 10" × 6½", pp. 176, with 106 illustrations. Price $10.50.

ALTHOUGH the ischium does not constitute a very big section of the pelvis, here we have a monograph that includes the anatomy of the bone, clinical and radiographic features of its abnormalities, injuries and diseases, and also the surgical approach to it. Although the author is a visiting orthopædic surgeon to the well-known New York Hospital for Joint Diseases, he has not forgotten to include what is designated as "ischium varum" or narrowing of the transverse diameter of the pelvis outlet between the two ischial bones, and devotes a special chapter to a subject "that has only recently acquired stature in orthopædic terminology", although well known to obstetricians. The description of the surgical approach could be useful if a rare and uncommon operation on this bone was contemplated. There now remains a place for an account of the pubic bone.

Surgery of the Sympathetic Nervous System. By Professor Sir James Paterson Ross, K.C.V.O., LL.D., M.S., F.R.C.S., F.R.A.C.S., F.A.C.S.; Third Edition; 1958. London: Baillière, Tindall and Cox. 9" × 6", pp. 182, with 51 illustrations. Price: 35s. (English).

THE author states that this new edition is largely rewritten, and embodies experience not possessed when the earlier editions were written. Being the result of much well-considered experience in this field, it is a valuable book. After an anatomical and physiological introduction, it is divided into sections dealing with the fields in which sympathetic surgery has proved of value. These are "Disorders of Peripheral Circulation", "Arterial Hypertension", "Hyperhydrosis", "Causalgia" and "Visceral Pain". Each section is divided into two parts, consideration of clinical indications and operative techniques; simple line drawings make instructive illustrations.

The author makes many observations of great value to surgeons having less experience. There is no doubt as to the great value of sympathectomy for most peripheral vascular disorders, and it is refreshing to find that the indications are not assessed, as is so often thought, by mechanical means or rules of thumb. Patients should be declined only for reasons of general unsuitability. Many such useful observations come from a large experience, and the book should commend itself to physicians and surgeons interested in this branch of work.

Rehabilitation Medicine. By Howard A. Rusk, M.D., and thirty-six collaborators; 1958. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 9¾" × 6½", pp. 574, with 172 illustrations. Price: £6 12s.

REHABILITATION as we know it today, a team approach to the care of the disabled, involves many people and many techniques. Dr. Howard A. Rusk and 36 collaborators, from the Department of Physical Medicine and Rehabilitation, New York University, Bellevue Medical Centre, have achieved their objective in writing a basic elementary textbook, which is also a valuable reference book for all physicians and therapists, whether they are in general practice or specializing in rehabilitation.

"Rehabilitation Medicine" is a book of convenient size, well printed on good paper with clear illustrations, which give a practical demonstration of the many details involved in all areas of the rehabilitation art. It is written by a team for a team.

The first 15 chapters (Part I) deal with the basic principles of rehabilitation, the terms of reference of each member of the team and the methods of communication which weld them into a properly functioning unit of dedicated people with a common aim—"The restoration of the disabled to the greatest degree of usefulness comparable with their abilities and disabilities". Although this part describes the techniques used in a large institution, the details are so clearly set out that, even with simple equipment and common sense, trained people should be able to adopt these principles to their individual problems. Part I covers evaluation, principles of physical medicine, therapeutic exercise and muscle reeducation, occupational therapy, and nursing, as well as the management of the disabled housewife and the vocational training and placement of the injured worker. The photography in the illustrations is of a high order, and the details emphasized are practical and most helpful.

Part II of the book describes the application of these principles to specific diseases, giving a comprehensive survey of all the work done in Dr. Howard Rusk's own department, as well as references from the world literature.

When we remember that this book covers the first 12 years of the experiences of this team in a comprehensive rehabilitation programme in a general civilian hospital (Bellevue Hospital, New York City), it is a splendid record of achievement for a new project, and fills a much-felt need for an authoritative account of the details which they have worked out and proved to be efficient. Their teaching that "today every patient should be approached as a rehabilitation problem from the earliest hours of his illness or accident until he is placed safely back in remunerative employment" is spreading throughout the world. The techniques which are being used in large centres will gradually become everyday practice by the general practitioner and all specialists in whatever field they have chosen, so that this well documentated and detailed publication is welcome, and should be read by the young graduate and medical student, to enable them to mould their future approach to the patient with these principles in mind.

Dr. Rusk and his collaborators are to be congratulated on their worthy effort.

Pathology for Students of Dentistry. By George L. Montgomery, T.D., M.D., Ph.D., F.R.S.E., F.R.F.P.S.(G.), F.R.C.P.E.; Second Edition; 1958. Edinburgh and London: E. and S. Livingstone, Limited. 8½" × 5", pp. 316, with 134 illustrations. Price: 40s. (English).

THERE have been so few changes in this book that the revision seems hardly to have been necessary. This would have been a convenient opportunity to give more of the fundamental background to general pathology and to some of the systemic diseases, such as the anæmias and leukæmias, which affect the mouth. The text is very largely based on descriptive morbid anatomy, and while the pathology of the post-mortem room may have some dramatic interest for the dental student, there is little chance that much of the information gained will be applied at a later date. On the other hand, the physiological approach to general principles, which has been used in some recent textbooks, would far more satisfactorily prepare the way for clinical studies and at the same time suggest to the interested student an avenue for post-graduate study.

Therapeutic Heat. Edited by Sidney Licht, M.D.; 1958. New Haven, Connecticut: Elizabeth Licht, publisher. 9" × 5½", pp. 479, with illustrations. Price: $12.

THIS is a highly technical publication suitable for detailed post-graduate study by trained physical therapists and physiatrists. It is too complicated to be easily read by the ordinary physician, by whom the details of physics have been left behind in the medical school.

The contributors, both British and American, cover many notable authorities in the field of physical medicine, and they have set out minute details of the physics, physiology and general principles of therapeutic heat in the first 13 chapters. The remainder of the book covers the application of these principles to specific diseases. Today in physical medicine the emphasis is more on remedial exercise than on the mere application of heat, which is used as an adjunct to the other methods, and in the details of treatment of specific diseases one finds this approach repeated. The descriptions of the various forms of heat and the machines concerned, their limitations, and the precautions to be taken in their use, serve as a valuable guide to therapists and doctors who require a reference book.

The print in this volume is unfortunately small, and the many details make it heavy reading, which would not appeal to the tired therapist at the end of a busy day; but the collected writings of so many international authorities make it a useful addition to the reference library.

Chemical Transformations by Microorganisms. By Frank H. Stodola; 1958. New York: John Wiley and Sons, Incorporated. 7½" × 4¾", pp. 144. Price: $4.25.

THIS slim book is based on the E. R. Squibb Lectures on Chemistry of Microbial Products, delivered in 1957 to the Institute of Microbiology, Rutgers University, N.J. It is printed on good quality paper and attractively bound in stiff covers; at the same price per word of text, Topley

and Wilson's "Principles of Bacteriology and Immunity" would cost about £100 and the "Encyclopædia Britannica" £3800.

The author constructs a series of brief reviews around various topics which have concerned him and his colleagues, for example: the lipids of *Mycobacterium tuberculosis*; the oxidation of various compounds; transglycosylation reactions; the structure of zymonic acid; the accumulation of alpha-keto glutaric and L-glutamic acids; some rather esoteric pigments; and the structure, sources and effects of the gibberellins. The text is lavishly embellished with structural formulæ and equations taken, with acknowledgements, from current literature, but reproduced on a scale so large that two or three occupy an entire page. For instance, about one-tenth of the book (5s. worth) consists of 26 equations illustrating various ways in which micro-organisms can specifically oxidize steroids.

The author's ability and experience are unquestioned, his choice of lecture material may have perfectly suited his purpose and each subject discussed is of undoubted intrinsic interest; but what is the justification for publishing this arbitrary selection of topics, treated at this level, in book form, at an utterly unrealistic price? Biochemically-uneducated organic chemists may be impressed by the convincing demonstration that micro-organisms are more versatile than Grignard reagents: but any advanced textbook of biochemistry could achieve the same effect. Microbiologists should already be familiar with the basic subject matter, and the specialized details are generally available in numerous exhaustive reviews.

In assessing the value of a book, the reviewer must balance price against contents. Very up-to-date scientific material must, paradoxically, be obsolescent almost as soon as it reaches print; and such publications as this one do not seem to warrant more than a cheap paper-backed pamphlet.

Ten Million and One: Neurological Disability as a National Problem. Arden House Conference, sponsored by the National Health Council; 1957. New York: Paul B. Hoeber. 8" × 5¼", pp. 128. Price: $3.50.

THIS book is a detailed account of a conference sponsored by the National Health Council and held at Arden House, Harriman, New York, in December, 1955. The delegates represented many of the important associations and foundations existing in the U.S.A. for the care of the disabled, and the problems discussed were those arising from the altered outlook of a patient with a serious disability of the central nervous system. It is an assessment of progress and gaps in knowledge "with suggestions to guide future individual and collective action".

The economics of neurological disability, and the professional and technical management of patients with neurological disabilities and their care from pre-school years to old age are the main subjects of the conference. The outlook for research concerning neurological disabilities is discussed, as well as the information and education programme. The appendix lists the neurological disorders that call for special rehabilitation techniques, with an attempt at classification. This makes one realize the scope of the problem and the necessity for a conference such as this, to plan an over-all coordinated programme to prevent too much emphasis on the care of the spastic child, and too little emphasis on the brain-damaged adult, who is a breadwinner and the head of a family. There is a great deal of detail, but much of it is redundant, and the book is suitable only to add to a list of references.

A Handbook of Medical Hypnosis: An Introduction for Practitioners and Students. By Gordon Ambrose, L.M.S.S.A., and George Newbold, M.B., B.S., M.R.C.S., M.N.S.A., D.R.C.O.G., D.C.H.; Second Edition; 1958. London: Baillière, Tindall and Cox. 8½" × 5", pp. 289. Price: 27s. 6d. (English).

THIS book is addressed to general practitioners, with the object of stimulating a wider use of hypnosis in general practice. The authors present an account of medical hypnosis which is simple, direct and readable. There is a good summary of the history of medical hypnosis, and the chapter on the use of hypnorelaxation in obstetrics makes convincing reading. However, like most books of the kind, the bulk of it is occupied with short accounts of patients successfully treated with hypnosis. These cover a very wide range of medical conditions including anorexia, chronic dyspepsia, migraine, mucous colitis, peptic ulcer, diabetes mellitus, essential hypertension, multiple sclerosis and rheumatoid arthritis, delinquency, enuresis, idiopathic epilepsy, menorrhagia, dysmenorrhœa and many other conditions.

The section dealing with the actual induction of hypnosis is extremely skimpy. It gives no account of the underlying psychodynamics of hypnosis, and no adequate description of the techniques employed.

When persons are being introduced to something new, simplification is necessary; but simplification which fails to give the initiates some warning of potential hazards and complications is dangerous. In our opinion, the authors err seriously in this respect. For instance, in the section dealing with the gynæcological use of hypnosis, they suggest that hypnosis should be used for those patients who would otherwise be given an anæsthetic for vaginal examination. There is no warning that such a procedure may evoke erotic phantasy in the patient, which could easily lead to disturbing abreaction or unpleasant accusations. The authors would seem to ignore the qualitative differences in anæsthesia which is chemically or psychodynamically determined.

There is much wisdom in the foreword by Dr. William Moodie concerning the relief of anxiety by hypnosis. The book is well set up and printed. There is a good index. The short case histories explain the superficial psychodynamics of various psychosomatic conditions; but there is no real attempt to explain the psychological mechanisms of hypnotherapy. The authors serve some purpose in bringing before the general practitioner some of the potential uses of hypnosis; but those who would contemplate the use of hypnosis in their practice would surely seek some more critical source of information and some more detailed instruction in the actual technique of hypnosis.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Blood Pressure Sounds and Their Meanings, Part 2. Ætiology of Melanotic Cancer", by John Erskin Malcolm, B.Sc., M.B., Ch.B., F.R.C.S.; 1959. London: William Heinemann (Medical Books) Limited. 7¾" × 4½", pp. 80, with 14 illustrations. Price: 13s. 6d. (English).

The second half of this title refers to a brief chapter which is apparently unrelated to the rest of the book.

"History of the Second World War, United Kingdom Medical Series", Editor-in-Chief: Sir Arthur S. MacNalty, K.C.B., M.A., M.D., F.R.C.P., F.R.C.S.; "The Army Medical Services: Campaigns: Volume III. Sicily, Italy, Greece (1944-45)", by F. A. E. Crew, F.R.S.; 1959. London: Her Majesty's Stationery Office. 9¼" × 5¾", pp. 681, with 130 illustrations and 58 tables. Price: 100s. (English).

The third of five volumes on "Campaigns".

"Sex, Love and Society", by E. R. Matthews, M.R.C.S., L.R.C.P.: 1959. London: Victor Gollancz, Limited. 7¾" × 4¾", pp. 200. Price: 12s. 6d. (English).

A book on the problems, sexual, marital and religious, faced by boys and young men.

"A Practical Handbook of Psychiatry for Students and Nurses", by Louis Minski, M.D., F.R.C.P., D.P.M. Fourth edition; 1959. London: William Heinemann (Medical Books) Limited. 7¼" × 4½", pp. 152. Price: 7s. 6d. (English).

The book has been revised since the previous edition of 1956.

"The Work of W.H.O. 1958: Annual Report of the Director-General to the World Health Assembly and to the United Nations", Official Records of the World Health Organization, No. 90, March, 1959. Geneva: World Health Organization. 11" × 9¼", pp. 626, with illustrations. Price 10s. (English).

The title is self-explanatory.

"Surgical Technique", by S. Power, M.S., F.R.C.S. Second edition; 1959. London: William Heinemann (Medical Books) Limited. 7¼" × 5¼", pp. 421, with illustrations. Price: 40s. (English).

Intended as a guide to house surgeons and resident surgical officers.

The Medical Journal of Australia

SATURDAY, AUGUST 22, 1959.

THE B.M.A. CONVERGES ON NEW ZEALAND.

AUSTRALIANS will be interested to learn that the Annual Scientific Meeting of the British Medical Association (the whole Association, not just the New Zealand Branch) will be held in Auckland, New Zealand, from February 6 to 10, 1961. This will be an important occasion. It is not often that the B.M.A. goes abroad for its Annual Meeting, although it is its policy to do so from time to time. A very successful meeting was held in conjunction with the Canadian Medical Association at Toronto in 1955. A meeting in conjunction with the South African Medical Association was planned for 1951 in Johannesburg, but this was abandoned because the South African Government would not give an undertaking that there would be no discrimination shown towards delegates on racial grounds. The last visit to the Antipodes was in 1935, when the Annual Meeting was held in Melbourne. This was a great success. Quite a substantial delegation came out from the United Kingdom, to join with the Australian component in the scientific and social programmes, and Branches of the Association in other parts of the world, including New Zealand, were well represented.

It is certainly to be hoped that members of the Australian Branches will make the extra effort to cross the Tasman Sea in 1961, so that Australia will be well represented at the New Zealand meeting. It is a rare opportunity to attend a B.M.A. Annual Scientific Meeting, and New Zealand has many additional attractions to offer. We wish our New Zealand colleagues well in this venture and hope that many Australian doctors will be meeting them and their visitors from the United Kingdom and elsewhere in February, 1961.

GETTING WELL AFTER INJURY.

THE time is no longer, if indeed it ever legitimately was, when the surgeon could be dubbed a carpenter of living tissue or when he could consider his task completed at the end of a surgical operation. Technical skill, dexterity and judgement at operation are, of course, still the *sine qua non* of sound surgery, but it is equally important that the surgeon should see the patient through the process of getting well. This may consist largely of supervising the activities of others skilled in special fields, but it does mean that the surgeon needs to understand in some measure what is going on during convalescence so far as modern medical science makes this available to him. So he must be something of a physiologist, a pathologist and a psychologist, with an understanding of man in his social environment and an appreciation of the importance of restoring his patient to the fullest state of effective living that is reasonably possible.

Surgical convalescence is a complex and fascinating process, about which a great deal has been found out in recent years. A fundamental aspect of it is wound healing, which, was discussed recently in these columns,[1] but there is more to it than just that. According to Francis D. Moore, convalescence includes "all the interlocking physical, chemical, metabolic, and psychological factors, commencing with the injury, or even slightly before the injury, and terminating only when the individual has returned to normal physical well-being, social and economic usefulness, and psychological habitus". Those who would like to follow these ramifications of the subject in some detail will do well to examine a recently published group of papers[2] of which Moore's paper ("Getting Well: The Biology of Surgical Convalescence") is one. The series of papers is the result of a conference on "Surgical Convalescence", held and supported conjointly by The New York Academy of Sciences and The American College of Surgeons, at Chicago in March, 1958. It is not practicable to do more here than indicate the ground covered by listing the papers. The question of metabolic response to surgery (systemic, adrenal and compositional) is considered by James D. Hardy and that of repair of tissue after injury by J. E. Dunphy. In an interesting contribution from veterinary medicine M. W. Allam and J. E. Martin survey some physiological responses of domestic animals during the immediate post-surgical period. The duration of convalescence is examined in two papers from two points of view: by H. J. Saffeir on the basis of insurance statistics, and by N. H. Moss and F. C. Dohan on the basis of a survey of doctors' opinions. Criteria for fitness are discussed by H. L. Taylor and A. Keys. Howard A. Rusk writes on convalescence, rehabilitation and the therapeutic use of stress, Paul R. Hawley on the sociological importance of the convalescent period, Frank B. Berry on convalescence and manpower, and Arthur M. Sutherland on psychological factors in surgical convalescence. K. G. Bartels and C. G. Johnstone present a study of the complications of the post-hospitalization period. In three papers on the problem of return to work, Allan J. Fleming presents an industrial study, David Gold writes on early ambulation and return to full duty in the United States Air Force, and John H. Powers considers the influence of early ambulation on post-operative complications and return to work after hernioplasty in a rural population.

It will be seen that there is nothing much here (in a monograph of over 150 pages) about surgical technique. The emphasis is on the physiological, psychological and economic aspects, in all of which the surgeon needs to be interested, before, during, and after operation. As I. S.

[1] MED. J. AUST., 1959, 2: 223 (August 15).

[2] "Surgical Convalescence", by F. Curtis Dohan, N. Henry Moss *et alii*; "Annals of the New York Academy of Sciences", Volume 73, Art. 2; 1958. New York: The New York Academy of Sciences. 9" x 6", pp. 53, with many illustrations. Price: $4.00.

Ravdin comments in his introduction to the monograph, the preparation of the patient adequately to withstand anæsthesia and operation and the maintenance of homœostasis in the post-operative period must be of primary concern to the surgeon, and he must be interested in both the physical and the emotional rehabilitation of his patients. If we seem to have laboured these points, it is not because we think that competent and conscientious surgeons are not interested in them in a general way. The important point, quite apart from the possibility that some less thoughtful surgeons may not have given much consideration to the matter at all, is that it may not be realized as widely as it should be that these aspects of the subject have been investigated intensively, and that a great deal of fundamental knowledge of them is now available. Much of this is set out in the monograph, which, in the words of Dohan and Moss in their concluding remarks, provides medical men with the opportunity to reevaluate their concepts concerning surgical convalescence. Back in 1941 we discussed in these columns[1] the surgeon's responsibility for the after care of his own patients and stressed the need for hospital administrative arrangements that made this possible for the surgeon as much in his attendance at a public hospital as in his private practice. The responsibility is so much the greater as the fundamental knowledge available to the surgeon grows and as we see surgery (in words used on a previous occasion[2]) "thrusting its roots deep into the basic sciences, spreading its branches widely into new diagnostic responsibilities and putting out brilliant blossoms of operative achievement".

Current Comment.

HYPNOSIS, DIET AND WEIGHT REDUCTION.

WHILE it is obvious that obesity is directly related to the consumption of too much food, in the sense that more is eaten than the body actually needs, it is not so obvious why some people eat too much. Much of modern eating is based on habit patterns and visual appeal. It is also being increasingly recognized that many people eat food in excess as a substitute mechanism for deep psychological stresses. On the other hand, in modern life caloric expenditure is lowered because of the increased use of mechanisms such as motor cars, lifts etc. for increased comfort and ease of living. This all adds up to obesity and a problem of control. It might be expected that hypnotic suggestion could help in controlling diet and eating habits, but no detailed scientific study seems to have been made of this, although it has been shown that hypnotic suggestion can affect the functions of the alimentary canal. Now L. B. Winkelstein reports a detailed study of 42 female patients who were considerably overweight.[3] All were in good health, all had normal histories and normal findings on physical examination, and all had the ability to pass into a deep hypnotic trance. Winkelstein points out that the main therapeutic value of hypnosis lies in the fact that while the subject is in the trance state there is an increased susceptibility to receiving and holding acceptable suggestions. In the present series, when the trance state was well developed, many different types of suggestion were offered. These included increasing the patient's desire for weight loss, suggestions for the development of proper eating habits and elimination of between meal snacks, direct suggestions as to the actual type of diet to be followed, such as one of high protein, low fat and low carbohydrate content. An attempt was made to assay the psychological drive for increased consumption of food.

All the patients showed reduction in weight over periods of three months and six months, although the weekly weights sometimes went up instead of down. Over a period of fourteen weeks of active hypnotic treatment, the maximum weight loss was 58·5 lb., the minimum 9·25 lb. In the six-month period the 42 patients lost in all 1124 pounds. The average loss per week during the 14 weeks of active treatment was 1·66 lb. None of the original group dropped out during this period.

Wilkenstein, in commenting on the results of this study, expresses the view that the main efficacy of the hypnotic treatment lies in the building up of new and more rational dietary habits. The early effects were short-lasting; repetition resulted in increased resistance to dietary indiscretions. After the 14 weeks of active hypnotic treatment it was noted that the effective changes in the dietary habits were not lost, although the active trance therapy had been stopped. No doubt a good deal more remains to be understood about this approach, but when one considers the very large number of failures with all other methods of treatment for obesity, it would seem that this method would be worth a trial in suitable cases.

A FACET OF ANTARCTIC MEDICINE.

IT is nowadays regarded as axiomatic that any properly equipped antarctic expedition should include a medical officer among its personnel, and since the days of Edward Wilson there has been a steady accumulation of polar medical literature. Following in Wilson's footsteps, some medical officers have doubled as the party's naturalist. However, with increasing knowledge, biological research has become increasingly specialized, and the contribution which the interested amateur can make is more and more limited. For this reason, and because of the widening horizons of medical science, there is a proper tendency to look for research projects in the medical field. In the human field, the doctor's choice of subjects is inevitably limited to a small group of healthy young men, and one of the most obvious lines of investigation is the effects of living under extreme climatic conditions. Unfortunately, from this point of view, the amenities of a modern polar research station and the personal equipment of its members are such that significant evidence of adaptation to cold is not to be expected. In fact, the adaptation of the human body to cold can more profitably be studied (as has recently been done) among primitive aborigines in remote parts of northern Australia (who can sleep comfortably, lying naked in the open, at quite low temperatures) than among modern polar explorers. For this reason the experiences of R. Goldsmith,[1] who was medical officer to the Advance Party of the recent Commonwealth Trans-Antarctic Expedition at their Weddell Sea base, are of special interest. He had gone prepared to carry out a programme of research into the effects of the environment on the personnel of the expedition. Because of mishaps it was not possible to carry out the programme of physiological work which had been planned, but circumstances unexpectedly provided an opportunity for observation of human response to conditions far more rigorous than had been anticipated.

The duties of the Advance Party, consisting of eight men, were, primarily, to prepare a base for the Crossing Party, due to arrive the following year. Because of adverse conditions in the Weddell Sea the ship was five weeks behind schedule in landing the Advance Party, so had to withdraw as soon as the stores were landed; and a considerable part of these stores were lost almost immediately

[1] MED. J. AUST., 1941, 1: 209 (February 15).
[2] *Ibid.*, 1956, 2: 385 (September 8).
[3] *N.Y. St. J. Med.*, 1959, 59: 1751 (May 1).

[1] *Lancet*, 1959, 1: 741 (April 11).

because of the break-up of the ice on which they were temporarily stacked. As a result, the Advance Party spent the Antarctic winter building the new base under extremely adverse conditions, while they themselves lived in a crate 20 feet long, nine feet high and seven feet six inches wide. This was partially insulated; nevertheless, ice had periodically to be chipped off the inside walls. They slept in four two-man tents. Ventilation of the crate was an acute problem, and the occupants often showed symptoms of carbon monoxide poisoning, due to the fumes from the paraffin heaters and primus stoves. Goldsmith remarks that washing and toilet facilities were non-existent, but that this did not seem to give rise to any ill effects. The party lived under these conditions for nine months, during which time nine out of ten days were spent working outdoors. Digging snow, to get at their buried stores, was the commonest occupation. Considerable degrees of acclimatization were noted. At first a temperature of −30° C. with a wind speed of 20 knots was considered a signal to retreat to the shelter of the crate, but later on much lower temperatures were regarded as comfortable working conditions, and no difficulty was experienced in breathing, nor was there any evidence of pulmonary damage from working at temperatures around −45° C. The engineer had to service the vehicles out of doors, and some men became amazingly good at working in low temperatures with bare fingers. Nearly all managed to remove their gloves to handle tacks at −18° C., though only the carpenter was able to work in still air at −36° C. with bare hands. Other evidence of acclimatization was provided by the amount of clothing considered comfortable for similar climatic conditions at the end of the year compared with the beginning, and by the records of sleep.

The health of the party remained good, in spite of these conditions, and in the whole year only one man-day was lost from illness. Goldsmith remarks that in circumstances where being sick is so uncomfortable, illness tends to be ignored. Complaints directly attributable to cold were all minor. In the first few months some suffered from aching pains and stiffness in the finger joints, accompanied by some swelling of the joints without reddening. This condition was worse in the morning and improved as the day went on. During the early part of the winter there were a number of cases of sore throat with partial voice loss, but these did not seem to be infectious, and Goldsmith suggests that they may have resulted from inhalation of very cold air. Severe chronic indigestion was frequent, although the diet was not considered to contain an excessive amount of fat. Antacids were the medicine most frequently in demand. Goldsmith notes that dental examinations on return home suggested that fillings deteriorate in the cold, and that caries continues at least as fast as under normal conditions. An interesting observation was that the weights of individuals fell slightly, or remained steady throughout the year. Other observers have reported a rise in weight during the winter months, but Goldsmith points out that this is almost certainly due to the inactive life during the polar night and not to any function of cold acclimatization.

WATER SUPPLY PROBLEMS.

WE sometimes grumble about our public water supplies, and it is certainly reasonable to expect a high standard in this field especially in our large centres of population. However, just how well off we are in this respect is probably little appreciated. It is highlighted by a report of part of the proceedings of the Twelfth World Health Assembly, which recently concluded its meeting in Geneva. It is reported that the Programme and Budget Committee of the Assembly unanimously adopted a resolution approving a spearhead programme, put forward by the Director-General of WHO, Dr. M. G. Candau, to provide safe and adequate supplies of water to inhabitants of communities. This was recognized to be an important measure for the protection and improvement of health and indispensable for economic and social development. According to Dr. Candau, "water predominates as the major constituent in practically every phase of an individual's physical, social and economic life. Experience has proved that making potable water available to the individual is the foundation on which rests the health and economic progress of the community. Because of the basic public health importance of community water supplies, WHO cannot remain aloof from its obligation to supply the stimulation and assistance needed to bring about their construction". He went on to say:

> It is disheartening to record that in 1959 in many major cities and their densely urbanized satellites many millions of people are still dependent upon individual wells, springs or itinerant purveyors for this life-giving commodity. Cities, ranging from two to seven or eight million people, not only fail to furnish water through pipes to households of several hundreds of thousands of their inhabitants, but even to those directly connected to the system they supply an unsafe water, often on a ration basis of a third of each day or less. This significant fact is often ignored in determining environmental sanitation programmes.
>
> The labour involved in drawing water and transporting it for a long distance, a task which often falls to the lot of the women, results in their virtual enslavement. Frequently as much as one-half of their time, day after day, month after month, is taken up with this essential chore. A very simple calculation will show that there is no more efficient means of transporting water than by a pipe. A small pipe, one inch in diameter, will deliver in a day, without human effort, as much water as can be carried by 150 women working steadily for eight hours. Even in the most advanced countries there are still great deficiencies.

The spearhead programme proposed by WHO is summarized as follows:

> Member States, with the leadership of WHO, might focus upon a programme to bring to the houses of the people safe drinking water in ample quantities. A concerted drive on this major programme would bring great results. Such an effort would not exclude all other sanitation activities, but it would place first things first. It would dramatize an overwhelming need and desire of all people. It would not be necessary, in this programme, to waste precious years to educate people toward a desire for better water. Actually, people are ahead of the experts on this point. The practitioners should catch up with the people.
>
> For such a programme to be successful it should move rapidly beyond lip service to real effort, including budgetary allotments, increases in skilled personnel, and actual operating programmes. Its success would demand of ministries of health a militant and continuing leadership and a far closer co-operation with departments of public works than now generally exists. It is sound to separate the stimulative functions of a health department from the executive functions of a public works department. Such administrative separation, however, does not justify each in going its own way. Their own co-operation is essential in carrying forward a water supply programme.

The resolution adopted by the Programme and Budget Committee asked the Director-General "to continue his study of ways and means of assisting governments to provide safe and adequate supplies of water to inhabitants of their communities, including an investigation of existing international loan or other funds which might be available for investment in such facilities". The resolution also asked the Member States of the World Health Organization to give priority in their national programmes to the construction and extension of supplies of safe water to communities, and suggested "that within each country requiring such a facility a revolving fund be established to provide loans for water supply development to local agencies of governments". The Committee decided that a special account should be created which would be financed by contributions to help governments to draw up plans for the provision of public water supplies. Finally the committee invited "all-multilateral and bilateral agencies having an interest in this field to cooperate with the World Health Organization in carrying out a global water supply programme".

Abstracts from Medical Literature.

SURGERY.

Transanastomotic Tube Feeding after Gastric Surgery.

M. D. Pareira and M. A. Heeb (*A.M.A. Arch. Surg.*, December, 1958) recommend the use of a small bore polyethylene feeding tube after gastric surgery, passed through the gastric anastomosis, as a routine prophylactic measure. They placed a small bore polyethylene feeding tube through the gastric stoma on to the efferent enteral loop at operation in 31 patients. These tubes took either a naso-gastro-jejunal, naso-gastro-duodenal, or gastro-jejunal route, depending on the operation performed. Of these 31 patients, 16 were fed through these tubes after operation, obviating the necessity of parenteral alimentation. In four complicated cases they state that tube feeding was prolonged, and was vital to the nutritional maintenance of the patients. The authors found no untoward reaction occurring from the use of these tubes or from continuous feeding through them.

Strangulated Internal Hernia Associated with Trauma.

C. J. Mock and H. E. Mock, junior (*A.M.A. Arch. Surg.*, December, 1958) describe two cases of intestinal obstruction due to internal hernia which they consider to be due to trauma; in one patient this occurred after severe automobile injuries, and in the other after a wood-chopping contest. One hernia was due to a hole in the omentum and the other to a hole in the mesentery. In the former case the authors attribute both the omental defect and the hernia to the injury, whereas in the latter they consider that the trauma precipitated the hernia through a developmental defect.

A New Plastic Mesh for Replacing Tissue Defects.

F. C. Usher and J. P. Gannon (*A.M.A. Arch. Surg.*, January, 1959) describe experimental studies in the use of "Marlex" mesh, a new plastic mesh for replacing tissue defects. "Marlex" is a polyethylene of high density and differs from conventional low-density polyethylene in a number of important respects. It possesses a highly crystalline molecular structure affording an unusually high softening temperature (260° F.) and high tensile strength when compared with conventional polyethylene. It is readily made into a monofilament, and a mesh made from this fibre is non-wettable and possesses outstanding chemical resistance. Its high softening temperature allows it to be sterilized in an autoclave with no damage. The tissue reaction to the implantation of "Marlex" was found by the authors to be less than that to nylon, "Dacron" and orlon, and equal to that of "Teflon". The thread count of the mesh is 42 by 40 per inch. A simple taffeta weave is used, which gives the mesh exceptional strength and prevents ravelling. The mesh can be cut to the desired pattern after autoclaving, and by searing the cut edges with a cautery a seal is obtained which permits sutures to be placed within one-eighth of an inch of the edge without pulling through. The authors tested the mesh on 31 large adult dogs in which they made defects in the abdominal wall, chest and diaphragm by excising rectangular blocks of tissue, including peritoneum and pleura. They sutured "Marlex" mesh over the defect and closed the skin over the implant. Inspection of the grafts at autopsy and histological examination showed the mesh to be well infiltrated with pliable fibrous tissue. Examination of the mesh after six months' implantation showed no fragmentation and no decrease in tensile strength. Infection studies demonstrated that granulation tissue would grow through the mesh in the presence of purulent infection without slough of the graft or sinus formation.

F. C. Usher, J. G. Fries, J. L. Ochsner and L. L. Tuttle (*Arch. Surg.*, January, 1959) report the clinical results in 78 patients with hernias or other tissue defects which they repaired with "Marlex" mesh. They state that there have been no recurrences to date in any of these patients. The material is stated to be inert in the presence of infection, and in the three cases in which wound abscess developed, treatment by open drainage and administration of the specific antibiotic was successful. In none of the infected cases was it necessary to remove the mesh. The authors state that it is too early to evaluate these cases from the standpoint of recurrence, but that they have been impressed with the firm repair resulting from the use of this prosthesis. From their clinical experience with "Marlex" mesh, they believe it will prove to be a valuable adjunct in the repair of hernias and other tissue defects of the chest and abdominal wall. For 25 patients with incisional hernia and 14 patients with inguinal hernia periods of six to 13 months have elapsed since the date of repair, and there has been no recurrence. In their description of the operation the authors state for all incisional hernias they need catheter-suction drainage with a pump in order to prevent accumulation of serum. In some cases it was necessary to remove serum by repeated aspiration after the tubes were withdrawn.

Peripheral Arterial Aneurysms.

E. S. Crawford, M. E. De Bakey and D. A. Cooley (*Arch. Surg.*, February, 1959) state that peripheral aneurysms may result from numerous conditions and list arteriosclerosis, trauma, infection and post-stenotic abnormalities, all of which are frequently associated with complications leading to arterial insufficiency, gangrene and even death of the patient. Recent advances in arterial reconstructive surgery make it possible both to excise the lesion and to restore arterial continuity. The authors report 107 cases of peripheral arterial aneurysms treated during the past five years. Of these, 54 were arteriosclerotic aneurysms, 37 traumatic, seven occurred in homografts, six false aneurysms occurred after peripheral arterial operations and there were three post-stenotic aneurysms of the subclavian artery. The anatomical distribution of the lesions is detailed, and their clinical manifestations are discussed. The aneurysms were excised in all cases and the circulation was restored by end-to-end suture of the uninvolved segments in 45 (14 arteriosclerotic, 29 traumatic and 2 post-stenotic aneurysms). The defect remaining after excision of the lesions in the other patients was of sufficient length to require an arterial substitute to restore peripheral circulation. Homografts, "Dacron" tubes and the Edwards-Tapp tube were used for this purpose. The authors state that the results obtained in these cases were extremely gratifying. Normal circulation was restored in the majority. Amputation was required for only six patients, although a large number had arterial insufficiency and gangrene at the time of operation. Three patients died, all of whom had arteriosclerotic aneurysms; in two, death was due to myocardial infarction, in the other it was caused by air embolism. Although the follow-up period has been over three and a half years in most cases, the results have been well maintained. Arterial occlusion has occurred in only three cases, and amputation has not been required in any case since discharge from the hospital.

Acute Appendicitis as a Sequel of Retention of Barium.

M. O. Young (*A.M.A. Arch. Surg.*, December, 1958) states that barium retained in the appendix may form the nidus for a fæcolith, which in turn may lead to obstructive appendicitis and its complications. He reports three cases in which he recognized this sequence of events. As a result of this study he considers that a patient whose appendix retains barium for longer than one week after an examination should be advised of the possibility of an abnormal state of that organ, with an increased chance that appendicitis will subsequently develop. He recommends that elective appendicectomy should be considered in those cases in which barium is retained longer than one month.

Development of Gastric Cancer after Gastro-Enterostomy and Gastrectomy.

G. T. Pack and R. L. Banner (*Surgery*, December, 1958) point out that the relatively rare sequel of cancer following gastro-enterostomy and gastrectomy for peptic ulcer and benign pyloric stenosis is being reported with increasing frequency, and state that this fact raises the question as to whether the presence of a new stoma associated with simple gastrectomy or partial gastrectomy may exert any ætiological influence on the subsequent development of cancer in the stomach. At the Memorial Centre for Cancer a survey of 1623 case records of gastric cancer showed that only 19 of these patients had experienced previous gastro-enterostomy or subtotal gastrectomy for a peptic ulcer. In a similar report from the Mt. Sinai Hospital, of 1160 patients with gastric cancer only 0·4% had undergone previous surgical treatment for benign stomach lesions. In a report on 825 consecutive operations performed at the Mayo Clinic for stomal defects after

previous gastro-enterostomy it is stated that only 11 cases of gastric cancer were found. The authors point out that no one has knowledge of the approximate length of time required for the genesis of human gastric cancer, even when evolving from cancer-in-situ. In their 19 cases, an average of 13 years had elapsed between the performance of the gastro-enterostomy (15 cases) or partial gastrectomy (four cases) for benign ulcer or pyloric stenosis and the subsequent known onset of gastric cancer. The longest time that had elapsed was 39 years, in the case of a patient who was 20 years old when gastro-enterostomy was performed. In 13 of the 19 patients the cancer had developed at or comprised the site of the gastro-jejunal stoma. Four developed the primary cancer in the region of the cardia. The authors found that benign marginal ulcers characteristically develop on the jejunal side of the stoma, but carcinomatous lesions always occur on the gastric side. They consider that the vast majority of marginal ulcers or benign stoma abnormalities evoking severe symptoms occur within the first three years after the initial operation; any malfunctioning lesion developing in the residual stomach after this period should be suspected as being possibly malignant.

Pulmonary Arterio-Venous Aneurysms.

L. H. BOSHER, A. BLAKE AND B. R. BYRD (*Surgery*, January, 1959) have analysed the gross pathological anatomy of pulmonary arterio-venous aneurysms with particular reference to the applicability of local excision. They studied 252 cases from the world literature, and to these added 98 previously unpublished cases gained from a *questionnaire*. The gross pathology varied widely, the lesions ranging from multiple, diffuse, pulmonary telangiectases involving both lungs to a single large aneurysm in one lung. In 12 cases a systemic artery joined the aneurysm. In approximately 64% of the cases the lesion was single and in 75% the disease was unilateral. In 239 cases surgical treatment was attempted, and in 19 of these bilateral resections were performed. There were 13 operative deaths. Seventeen patients under the age of 10 years were operated on, with good results in all but one. The authors describe a technique for performing local excision in a bloodless field, which they state can be employed in at least 50% of cases and is preferable to segmental resection or lobectomy.

Serial Cholecystography.

J. D. ROSE (*A.M.A. Arch. Surg.*, January, 1959) discusses serial cholecystography as a means of diagnosing biliary dyskinesia, which he defines as a disorder of the motility of the biliary tract. He states that this is of frequent occurrence, and that in 200 consecutive operations for biliary tract disorders a dyskinesia was found in 126 cases. He states that it is impossible to diagnose biliary dyskinesia on the clinical history and physical examination alone, and that cholecystography in its classical form is inadequate to diagnose a dyskinesia with any accuracy. He describes the technique of serial cholecystography which is an elaboration of orthodox cholecystography. He states that while time-consuming, this method is accurate, gives the patient a minimum of discomfort, and is the method of choice in most cases. It has been used for two years and in over 200 examinations. The author states that out of 100 consecutive cases, in 66 the result of "classical" cholecystography was reported as normal, but that in only nine was the biliary tract both functionally and morphologically normal, and that in 56 dyskinesia was present. He states that biliary dyskinesia is a most important disorder of the biliary tract, and is present in more than two-thirds of patients who come to consultation with symptoms of biliary tract disorder.

Infection with Synthetic Arterial Prostheses.

R. J. SCHRAMEL AND O. C. CREECH (*A.M.A. Arch. Surgery*, February, 1959) state that synthetic arterial prostheses have been observed to retain their function as vascular channels even in the presence of infection or when uncovered by soft tissue, but that they also act as foreign bodies in some circumstances, so hindering control of the infection and resisting all attempts to cover them. The authors describe six cases of infection of synthetic grafts. They managed to retain a functioning graft in two of these patients, but in four the graft had to be removed. The infecting organism in each case was a hæmolytic *Staphylococcus aureus* sensitive to several antibiotics. Bleeding occurred only from exposed anastomoses. The authors consider that an important factor in preventing these infections is the correct treatment of hæmatomas. They state that the ability of synthetic grafts to function in the presence of infection increases their usefulness in arterial restoration after trauma. Adequate treatment of established infections around arterial grafts involves wide external drainage of the infection followed by intensive local and systemic antibiotic therapy. Secondary closure of the wound may then be attempted. However, should infection persist, the graft must be sacrificed. This will often entail sacrifice of a functional artery and should usually be combined with sympathectomy or if possible construction of a new arterial channel in a sterile field.

Obliterative Arterial Disease.

J. J. CRANLEY, R. J. KRAUSE AND E. S. STRASSER (*Surgery*, January, 1959) state that arterial insufficiency of the lower extremity is mainly due to arteriosclerosis obliterans, and that the main problem is not one of diagnosis but of proper selection of therapy. Many of these patients require no treatment whatever, others can be managed conservatively, lumbar sympathectomy may be of value in some cases, and in others the restoration of the major arteries by a by-pass graft or thromboendarterectomy may provide dramatic improvement both in the nutrition of the limb and in the ability of the patient to walk without pain. In attempting to evaluate the results of different forms of treatment it is necessary to have a method of grading the severity of the disease by clinical examination, and the authors propose five grades: grade I, decrease in amplitude of dorsalis pedis and posterior tibial pulses; grade II, absence of both these pulses; grade III, absence of popliteal pulse; grade IV, continuous pain, with petechial hæmorrhages on the dorsum of the foot or skin necrosis. For most patients in grades I and II the authors recommend chiefly weight control and elimination of tobacco. For grade III they recommend lumbar sympathectomy, providing the patient is a good operative risk and below 70 years of age. In their more recent cases in this grade arteriograms were obtained and, if the distal arterial tree offered an adequate "run off", a grafting procedure or thromboendarterectomy was performed; otherwise lumbar sympathectomy was recommended. Surgical treatment is recommended for all patients with grade IV and grade V disease, unless there are strong medical contraindications. The authors consider that the appearance of moisture on the foot or a rise in skin temperature of the toes after tibial nerve block is evidence that lumbar sympathectomy will be of value. When treatment in grade IV and grade V cases is limited to conservative measures, recommendations include improved foot hygiene, use of a fungicide when necessary, trimming of nails and callosities, avoidance of tobacco, and warning against the application of direct heat. The authors analyse the results of the treatment of 679 lower limbs for 394 patients. Whatever treatment was used, the amputation rate rises steeply in grades IV and V. They conclude that if any significance is to be attached to the results of any particular form of therapy, the stage of the disease at the onset of treatment must be defined.

The Use of Heparin during Hypothermia.

R. H. WENSEL AND W. G. BIGELOW (*Surgery*, February, 1959) report on the use of heparin to minimize thrombocytopenia and bleeding tendency during hypothermia. They state that in their experience in open heart surgery with hypothermia an occasional patient demonstrates an abnormal bleeding tendency in which thrombocytopenia may be the major factor. They state that this thrombocytopenia during hypothermia can be minimized experimentally by the use of small doses of heparin given intravenously prior to cooling. They report a small series of clinical cases in which the use of heparin has minimized thrombocytopenia and has eliminated bleeding tendencies.

Venous Grafts.

J. F. SCHAUBLE, W. G. ANLYAN AND R. W. POSTLETHWAIT (*A.M.A. Arch. Surg.*, February, 1959) discuss the fate of autogenous, homologous, and plastic grafts inserted in the jugular veins and femoral veins (with and without vena caval ligation) of dogs. They concluded that autografts were equally successful in the jugular system and in the femoral veins. However, only 42% of the fresh frozen homografts were patent after four months, and all were occluded after eight months. On examination all these grafts were found to be embedded in dense fibrous tissue. All of the Edwards-Tapp nylon grafts were occluded with organizing thrombi. Isogravitational or antigravitational flow and stasis did not appear to influence the success rate of the autografts.

Medical Societies.

PÆDIATRIC SOCIETY OF VICTORIA.

A MEETING of the Pædiatric Society of Victoria was held at the Royal Children's Hospital, Melbourne, on February 11, 1959.

Hereditary Spherocytosis.

DR. B. FARAGHER presented a review of 38 patients with hereditary spherocytosis admitted to the Royal Children's Hospital during the period 1942-1957, with particular emphasis on the age of presentation and the clinical features and laboratory findings in the younger age group. He said that a relatively large proportion (13 patients out of 38) had presented during the first year of life. The findings in this group were contrasted with those in older children. It was shown that during the neonatal period and infancy the classical description of the disease did not apply. In the neonatal period jaundice was the outstanding feature, whereas in older infants anæmia without jaundice was more commonly found; splenomegaly was often absent or minimal; the family history might not be clear-cut, and hence might not aid in the making of a correct diagnosis; and the diagnosis by fragility tests might be obscured by recent blood transfusions in infancy or by A B O incompatibility in the neonatal period, which was also characterized by abnormal results in fragility tests. Dr. Faragher described the progress of four infants who had not yet undergone splenectomy; they had needed infrequent transfusions after the first few weeks of life, and the course of the disease was benign.

DR. MARGARET HORAN said that it was seldom that a group of cases of hereditary spherocytosis as large as the present one was available for analysis. She was interested in the number of young infants in the series, and in the ages at which splenectomy had been carried out. That interest had been stimulated by a survey of cases of splenectomy which she and her colleagues were carrying out. The survey had been prompted by disquieting reports in the literature of serious infections, in many cases fatal, following splenectomy in the first few years of life. The survey covered approximately 150 children who had had their spleens removed at the Royal Children's Hospital or at the Queen Victoria Hospital in the preceding 20 years. To date about half of them had been seen. The majority had had their splenectomy because of a ruptured spleen, the next most common cause being hereditary spherocytosis. So far 19 cases of hereditary spherocytosis had been reviewed. A number of those patients had been jaundiced and anæmic in the neonatal period, and some had had siblings who had died of jaundice and anæmia within a week or two of birth. It was therefore no longer merely academic, as Dr. Faragher had pointed out, to consider spherocytosis as a cause of severe anæmia and jaundice in the new-born. After the neonatal period jaundice was a much less common symptom in those cases, the liver in the older infant being better able to deal with excess bilirubin from increased hæmolysis. However, anæmia frequently continued, but if new blood formation could keep pace with blood destruction the hæmoglobin level might actually remain normal. In such cases the diagnosis might be suggested by finding that the reticulocyte count was raised to 2% or 3% or higher. It was only when something upset the balance in such cases that anæmia became overt, and the crisis of the text-book might be seen. Dr. Horan said that she noted that four of Dr. Faragher's patients had had their spleens removed under the age of one year and three more under the age of two years. In the post-splenectomy survey of 19 patients of all ages with hereditary spherocytosis, 17 were alive and well and two were dead. Those two, plus one other child who was alive and well, had been under the age of two years at the time of operation. One child, aged 17 months, had died at operation. In the other fatal case the spleen had been removed at the age of three months, and 22 months later the child had died after an illness of 12 hours' duration, and pneumonia and bilateral suprarenal hæmorrhage had been found at autopsy. That case had occurred in 1940 and was outside the scope of Dr. Faragher's survey. Such an occurrence, even though it was an isolated one, tied up with similar reports in the recent pædiatric journals, and called for caution in recommending splenectomy in the first few years of life.

The Treatment of Tuberculous Cervical Adenitis.

DR. A. MURRAY CLARKE discussed the treatment of tuberculous cervical adenitis. He said that diverging lines of treatment had been established, often built on erroneous assumptions, and often with generalizations based on inadequate study and follow up. As was the case in other diseases, a new drug had produced wonderful results, but then too much had been expected from it and the best treatment consequently had not been carried out. Although the condition of tuberculous cervical adenitis had become less common than formerly, it was still important to discover and use the best treatment if prolonged illness, sinus formation with persistent discharge, permanent disfigurement from scarring and sometimes from nerve involvement, and even occasionally death, particularly in the very young, were to be avoided.

Dr. Clarke went on to say that the rationale of treatment depended on three things in particular: (i) an understanding of the pathology, which included the mode of entry of the organism; (ii) a knowledge of the life history of the disease, which included the form of presentation, the proportion of cases in which softening, progressing to abscess formation, or calcification might occur, the time which it took for those phenomena to appear, and the period of morbidity; (iii) a study of cases in which different forms of treatment had been given, and the effect of the latter on the natural history.

Discussing first the pathology, Dr. Clarke said that it was important to determine whether the adenitis was part of a primary complex, or whether it arose by hæmatogenous spread from a primary focus elsewhere. Miller and Cashman had shown that a primary focus in the skin or a mucous surface could usually be found, except when the tonsillar gland was involved, and therefore any group of tuberculous lymph glands was likely to represent the gland component of a primary complex. In 80% of cases, peripheral adenitis was the only sign of tuberculosis. If that view of the pathology was correct, and if the gland mass was the solitary area of tuberculous infection, surely a good case could be made out for its eradication, either by surgical excision or by early administration of a drug or a combination of drugs.

Turning to the natural history, Dr. Clarke said that most patients presented with the accidental discovery of a painless gland swelling, and because of the lack of pain medical consultation was delayed, so that most of the glands were already soft when first seen. All softened within 12 months and most within six months, even when they were treated with anti-tuberculosis drugs, which often caused a diminution in size as the periadenitis resolved, but did not prevent ultimate softening. The breakdown of tuberculous glands was often sudden, and more rapid in children than in adults. It was very uncommon for primary tuberculous lymphadenitis to progress to calcification without softening and discharge, although it sometimes did so. Radiographically evident calcification rarely showed within one year, but the majority of glands were calcified in five years. The commonest complication was abscess formation, sometimes following a secondary infection from tonsillitis or measles. Another complication was involvement of the cervical branch of the facial nerve by the tuberculous inflammatory process, so that however careful the surgeon was with incision and dissection, he could not avoid damaging the nerve if he was asked too late to treat the patient. Fortunately, many such nerve injuries recovered. In all the cases studied, healing eventually occurred. The glands which underwent spontaneous rupture or were incised often took months to heal or broke down after initial healing, further abscesses forming down the path of lymphatic drainage. The morbidity, as gauged by the time spent in in-patient and out-patient departments, extended over months and years.

Dr. Clarke then compared methods of treatment. He said that in theory a combination of anti-tuberculosis drugs would be best, but with drug treatment relapse was common. In one case recorded by Kilpatrick and Douglas the patient was treated daily with PAS and INH for ten months, but one month after cessation of treatment the glands suddenly increased in size and became fluctuant. Lincoln, in 1956, recorded the fact observed by others that sometimes INH caused rapid breakdown of tuberculous glands, precipitating abscess formation. Drainage and incision and expression of disintegrated glands had their advocates. The management of a patient depended on the stage which the tuberculous process had reached; it might be very early and enlarged, painless glands might be present or there might be a large fluctuant mass with skin involvement. If no softening had occurred, treatment with adequate doses of streptomycin, INH and PAS for-

several months was acceptable, provided that close observation was maintained during and for a few months after the conclusion of drug administration. The surgeon should have the opportunity of assessing the patient before there was skin involvement. In all cases in which the glands had softened, surgery was the best treatment. The place of surgery was not solely to retrieve the failures resulting from other methods of treatment. Early excision of the glands would result in practically no scar if the incision was correctly placed, would avoid abscess and sinus formation and scarring and nerve involvement, and would result in the total eradication of the disease. If the skin was grossly involved, it was very difficult to get a good cosmetic result. When, because of extensive infiltration, it was not possible to remove all the tuberculous tissue, it was surprising what a good result followed the post-operative administration of streptomycin and INH.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

PUBLIC HEALTH.[1]

[From the *Australasian Medical Gazette*, March 20, 1896.]

THE proportion of deaths registered in Sydney and suburbs during January to every 1000 of the population was 2·61 and of deaths 1·59. The deaths of children under five years of age during the month were 339 or 52·15 per cent of the total, 259 being under the age of one year. Three deaths of child-bearing women took place during the month, or one death of a woman to every 356 births recorded. There were 18 fatal cases of heat apoplexy or sunstroke, in addition to many deaths from various causes accelerated by heat. During the month of January there were registered in Brisbane 167 births (83 males and 84 females) being 21 less than in January 1895. The deaths amounted to 84 as against 62 in the corresponding month last year. The true infantile mortality, or deaths under one year, as compared to births in the District was 7·69 per cent within, and 23·01 per cent outside the Municipality of Brisbane: 17·46 in that part of the District within the Municipality of South Brisbane: and 17·12 in that part of the suburbs outside the Registry District: the total rate for city and suburbs being 14·39. There were 18 deaths in public institutions, or 15·25 per cent of the total number of deaths in the district and suburbs.

Correspondence.

TOBACCO SMOKING AND LUNG CANCER.

SIR: I should like to support Dr. Orde Poynton strongly, both in his advocacy of the need for more positive action by the medical profession and his criticism of the arm-chair statistical approach to this subject. The latter, instigated by the tobacco companies, appears to be having a fair measure of success in its objective. This appears to belittle, if not to ridicule, all research on the inter-relationship of smoking and lung cancer, to emphasize what everyone already knew—namely, that absolute proof of causation is lacking—and to project what Dr. Poynton rightly terms a "fantastic theory"—namely, that lung carcinoma is in the main of genotypic origin. Surely the increasing number of deaths annually must at least cast doubt on this hypothesis; or are our genes changing from year to year?

However, I am moved to join this correspondence after having listened last night to "News Review" on the A.B.C. programme. Sir Ronald Fisher was introduced as a scientist who stated "there was no evidence for linking smoking and lung cancer". Sir Ronald in fact never made this categorical statement, though it could be inferred (I listened to his lecture); it is a pity that the statement should have been attributed to him.

Let us take five facts, unchallenged by anyone, scientist or tobacco magnate. A seven years' investigation in Great Britain has shown with regard to lung cancer in men: (i) a higher mortality in smokers than non-smokers; (ii) a higher mortality in heavy smokers than light smokers; (iii) a higher mortality in cigarette smokers than pipe smokers; (iv) a higher mortality in those who continued to smoke than those who gave it up; (v) heavy smokers now have a death rate from lung cancer 40 times the rate among non-smokers. This is convincing evidence linking smoking and lung cancer, and it should be widely publicized. Will the A.B.C. help?

The association between lung cancer and smoking is now admitted by all, and by many eminent scientists throughout the world this is accepted as a cause-effect relationship, though not the only cause.

The problem confronting the medical profession—and they must give the lead to the general public and to the nation—is one of preventive medicine, of how to deal with an epidemic. Let me quote here the President of the Royal College of Physicians of London, Professor Robert Platt.[1]

> It has been wisely said that the evidence against cigarette smoking as a cause [of bronchial carcinoma] is quite as strong as the evidence which led John Snow to remove the handle of the Broad Street pump and stop the cholera epidemics.
>
> The remedy to the bronchial carcinoma epidemic is not so simple to apply, but let us not pretend that we do not know what it is.

If preventive medicine had always to await the ukase of the statistician (be he geneticist as well) before taking action, the world would be an even sadder place today.

Yours, etc.,

British Medical Association House, COTTER HARVEY.
137 Macquarie Street,
Sydney.
July 24, 1959.

REPORT OF A CASE OF DIFFUSE INTERSTITIAL FIBROSIS OF THE LUNGS (HAMMAN-RICH SYNDROME) SUCCESSFULLY CONTROLLED BY PREDNISOLONE.

SIR: The histological appearances in the case of diffuse interstitial pulmonary fibrosis reported by Dr. Bennett (MED. J. AUST., July 18) leave no doubt as to the diagnosis of the Hamman-Rich syndrome. However, we find difficulty in interpreting the physiological results which he presents, and offer the following comments and alternative explanations.

1. The maximum breathing capacity (M.B.C.) of 38·2 litres per minute before treatment is lower than would be expected from a purely restrictive lesion, and suggests the presence of significant airway disease. The spectacular increase of M.B.C. following treatment could as well be explained by relief of this airway factor without change in the alveolar-capillary block status. We have seen and studied a patient with combined airway and diffusion disease with the other possible response to steroids. His diffusion defect was improved without change in the airway factor. As a result his M.B.C. did not rise, and he was not greatly improved clinically. Also, Read and Holland (1959) showed that there was a potentially reversible "mixing" factor in their cortisone-treated case of the Hamman-Rich syndrome.

2. The stated results for compliance are difficult to understand. Since it is impossible to measure compliance of lungs and thorax together during spontaneous breathing, we assume that lung compliance alone was measured. Even in this case, the result before treatment is within the normal range (e.g., McIlroy, 1959). The fall (from 0·12 to 0·06) following treatment suggests progression of the interstitial lesion. The progressive fall with increase of respiratory rate after treatment merely implies differing time-constants throughout the lungs, and is as consistent with an interstitial lesion which varies in severity in different parts of the lungs as it is with "emphysema" (Otis *et alii*, 1956). Read and Williams (1959) have shown that uneven ventilation probably due to this factor is common in patients with apparently pure interstitial disease of the lungs.

[1] From the original in the Mitchell Library, Sydney.

[1] *Brit. J. Dis. Chest.*, 1959, 1: 4.

3. Patients with alveolar-capillary block hyperventilate at rest, and this hyperventilation regresses after effective therapy. By contrast, in the patient reported by Dr. Bennett, the minute volume doubled after treatment with cortisone. This is again consistent with the presence of a continuing or worsening interstitial lesion. Relief of the airway obstruction with reduction of respiratory work would allow the (? hypoxic) stimulus to hyperventilation to proceed unimpaired.

4. The acid criterion that a severe interstitial lesion was still present is the finding of an arterial oxygen saturation of 91% in the presence of a normal M.B.C. and alveolar hyperventilation. The alveolar oxygen tension in the presence of this degree of hyperventilation would be at least 110 mm. of mercury. An arterial oxygen saturation of 91% (assuming a normal blood pH) indicates an arterial oxygen tension of about 65 mm. of mercury. There remains an alveolar-arterial oxygen gradient of at least 45 mm. of mercury (indicating a severe alveolar-capillary block).

There is no doubt that Dr. Bennett has greatly benefited his patient clinically by the use of steroids, but certainly not for the reasons offered. Some of the results are really inconsistent with any hypothesis, but, overall, they indicate that the major improvement was achieved by reversal of airway disease. No evidence has been presented of improvement in the diffusion defect.

Tests now available allow the various aspects of pulmonary function to be described with great precision. It is essential that the tests described by Dr. Bennett be performed in obscure lung disease, but their value in clinical medicine must rest on adequate interpretation. We respectfully submit that the interpretations offered in this case require reconsideration.

Yours, etc.

Department of Medicine, University of Sydney, Sydney.
July 21, 1959.

John Read,
H. J. H. Colebatch.

References.

McIlroy, M. B. (1959), "Dyspnœa and the Work of Breathing in Diseases of the Heart and Lungs", "Progress in Cardiovascular Diseases", 1: 284.

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Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Post-Graduate Conference at Penrith.

The Post-Graduate Committee in Medicine in the University of Sydney announces that, in conjunction with the Nepean-Hawkesbury Medical Association, a post-graduate conference will be held at the Log Cabin Hotel, Penrith, on Saturday and Sunday, September 26 and 27, 1959. The programme is as follows:

Saturday, September 26: 2 p.m., registration; 2.30 p.m., "Heart Disease in Childhood", Dr. Douglas Stuckey; 4 p.m., "Orthopædics—At Home and in the Far East", Dr. Warwick Stening.

Sunday, September 27: 10 a.m., "The Long Labour", Dr. Kelvin McGarrity; 11.30 a.m., "Recent Advances in the Management of Hypertension and Ischæmic Heart Disease", Dr. Douglas Stuckey; 2.15 p.m., "Surgical Treatment of Fractures, with Special Reference to Methods of Internal Fixation", Dr. Warwick Stening; 4 p.m., "Gynæcological Suggestions for the General Practitioner", Dr. Kelvin McGarrity; 5 p.m. to 5.30 p.m., "Brains Trust".

The fee for attendance is £3 3s., and those wishing to attend are requested to communicate as soon as possible with Dr. W. F. J. Cammack, President, Nepean-Hawkesbury Medical Association, 304 High Street, Penrith. Telephone: Penrith B 0233. Those desiring accommodation bookings are requested to notify Dr. Cammack early.

SYDNEY HOSPITAL: CLINICAL RESEARCH MEETING.

Dr. Ian Mackay, of the Clinical Research Unit of the Walter and Eliza Hall Institute of Medical Research, Royal Melbourne Hospital, will speak on "Auto-Immune Mechanisms in Disease" at the Maitland Lecture Theatre, Sydney Hospital, on Thursday, September 3, 1959, at 8 p.m. All visitors are welcome.

SEMINARS AT SYDNEY HOSPITAL, SEPTEMBER AND OCTOBER, 1959.

The following seminars at Sydney Hospital will be held in the Maitland Lecture Hall on Wednesdays, from 2 to 3 p.m. (This is the final seminar programme for 1959.) Each seminar will be preceded by medical grand rounds at 12 noon (Maitland Lecture Hall), lunch in the Board Room and a pathological demonstration in the Maitland Lecture Hall at 1.30 p.m.

September 2, "Constitutional and Epidemiological Factors in Peptic Ulcer", Dr. B. P. Billington (gastro-enterology clinic); September 9, "Pathology and Prognosis in Hodgkin's Disease", Dr. A. A. Palmer, Dr. B. J. Lake, Dr. R. L. Walker (hæmatology clinic); September 16, "Radiological Changes in Chronic Renal Disease", Professor C. E. Dent (University College Hospital, London); September 23, Sydney Hospitallers' Week; September 30, "Ocular Fundus in Hypertension", Dr. Alan Young, Dr. E. Donaldson (cardiovascular clinic); October 7, "A New Look at Lung Pathology", Professor J. Gough (Welsh National School of Medicine); October 14, "Clinical and Biochemical Aspects of Wilson's Disease", Dr. F. C. Neale, Dr. W. Wolfenden (neurology clinic); October 21, "Medical Rehabilitation, Problems in Hemiplegia", Dr. R. I. Meyers (rehabilitation unit); October 28, "Experiences with Intervertebral Disk Lesions", Mr. Douglas Miller (St. Vincent's Hospital).

THE MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

Programme for September, 1959.

The Melbourne Medical Post-Graduate Committee announces the following programme for September, 1959.

Refresher Courses.

Pædiatrics.

A course in pædiatrics will be held at the Royal Children's Hospital from August 31 to September 4 inclusive. The full programme for this course was published previously, and full information may be obtained from the Post-Graduate Committee or the Dean at the hospital. The fee of £2 2s. covers lunch and morning and afternoon teas.

Gynæcology and Obstetrics.

A course in gynæcology and obstetrics will be held at the Royal Women's Hospital. The programme, designed for general practitioners, is as follows:

Monday, September 7: Registration and tour of hospital with Dr. J. Laver and Dr. Beischer; "Labour Ward Emergencies", Dr. F. Forster; gynæcological round with Professorial Unit; "Analgesia in Labour", Dr. K. McCaul; "The Premature Infant", Dr. Glyn White.

Tuesday, September 8: "Minor Difficulties in the Ante-Natal Period", Dr. P. Jeffery; gynæcological round, Dr. B. Anderson; obstetrical and gynæcological quiz, Dr. C. K. Churches; "Maternal Mortality", Professorial Unit; clinico-pathological demonstration.

Wednesday, September 9: "Difficulties Associated with Induction of Labour", Dr. A. G. Bond; gynæcological round, Dr. C. K. Churches; obstetrical and gynæcological quiz, Dr. C. N. De Garis; "Diabetes and Pregnancy", Dr. R. M. Rome.

Thursday, September 10: "The Prevention of Pre-eclampsia and Management of Hypertension", Professorial Unit; gynæcological round, Dr. D. F. Lawson; "Macroscopic Diagnosis in Gynæcological Pathology", Dr. H. F. Bettinger; "Sterility", Dr. G. D. Ley.

Friday, September 11: "Ante-partum Hæmorrhage", Dr. G. D. Ley; gynæcological round, Dr. A. M. Hill; obstetrical ward round, Professorial Unit; nursery infections, Dr. J. Laver.

Monday, September 14: "Dangers at the Third Stage", Dr. J. Smibert; "The Detection of Genital Cancer", Professorial Unit; discussion on "Hormones in Obstetrics and Gynæcology", Dr. B. Anderson and Dr. W. J. Rawlings; clinico-pathological demonstration.

Tuesday, September 15: "Difficulties Encountered in Cæsarean Section", Dr. C. N. De Garis; "Gynæcological Discussion on Vaginal Discharges", Dr. A. R. Long; "Neonatal Infections", Dr. Kate Campbell.

Wednesday, September 16: "Assessment of Disproportion", Dr. R. M. Rome; "Ectopic Pregnancy", Dr. H. B. Hattam; "The Role of the Physician in an Obstetrical Hospital", Dr. W. McI. Rose.

Thursday, September 17: "Prolonged Labour", Professorial Unit; operative demonstration (vaginal repair), Dr. B. Kneale; "Carcinoma of the Uterus", Dr. A. M. Hill; "Post Script", the Dean.

Friday, September 18: "Abortion and Habitual Abortion", Dr. W. J. Rawlings; operative demonstration (abdominal hysterectomy), Dr. V. E. Hollyock; "Hyaline Membrane", Dr. T. G. Maddison.

In addition there will be normal ward rounds by the executive medical staff. The fee for tuition is £14 14s., and enrolments should be made with the Post-Graduate Committee. It will be desirable for those taking part to wear long white coats in the wards.

Medicine and Surgery.

Details will be published soon of the refresher course in medicine and surgery for general practitioners, to be held at the Royal Melbourne Hospital from September 21 to 25. Monday, Tuesday, Thursday and Friday mornings will be devoted to case presentations and discussion. Wednesday morning to a visit to Fairfield Hospital, Saturday morning to a quiz session. Monday, Tuesday, Thursday and Friday afternoons will be occupied with case presentations by specialist units. The fee is £9 9s., and enrolments should be made with the Post-Graduate Committee.

Course at Mildura.

On September 19 and 20, at the Base Hospital, Mildura, the following course will be held: Saturday: 2 p.m., "The Premature Infant", Dr. T. G. Maddison; 4 p.m., "Maternal Death", Professor Lance Townsend. Sunday: 10 a.m., "Management of Some Common Limb Fractures", Mr. P. Williams; 11 a.m., quiz session, all lecturers.

The fees for the course are at the rate of 15s. per lecture, or by annual subscription to the Post-Graduate Committee. Inquiries should be directed to Dr. R. L. Elix, Honorary Secretary of the Hospital Clinical Society, Mildura.

Flinders Naval Depot.

On September 16, at Flinders Naval Depot, at 2.30 p.m., Dr. Murray Maxwell will speak on "Spontaneous Pneumothorax". This lecture is given by arrangement with the Royal Australian Navy.

Course in Neuropathology.

Dr. Ross Anderson will conduct a course of five sessions in neuropathology at 2 p.m. on Wednesdays, continuing for the afternoon. These will start at the University of Melbourne on September 2. The fee will be £5 5s., and enrolments should be made with the Melbourne Medical Post-Graduate Committee as soon as possible.

PRELIMINARY ANNOUNCEMENT.

Mr. H. Osmond Clark, of London, will lecture on "Pain in the Neck and Arm", on Tuesday, October 13, at 8.15 p.m., at the Medical Society Hall, 426 Albert Street, East Melbourne.

ADDRESS.

The address of the Melbourne Medical Post-Graduate Committee is 394 Albert Street, East Melbourne. Telephone: FB 2547.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JULY 18, 1959.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	..	3(2)	6(2)	2	..	..	..	..	11
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	1	..	..	..	..	..	7	..	8
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1	..	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	1(1)	..	..	..	..	..	..	1
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	4	20(19)	5(5)	..	3(3)	..	3	..	35
Diphtheria	..	..	..	..	2(2)	..	..	..	2
Dysentery (Bacillary)	..	10(9)	2	1	1(1)	..	3	..	17
Encephalitis	..	..	..	..	..	..	..	..	..
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	1(1)	..	..	1
Infective Hepatitis	49(13)	20(12)	15(2)	6(1)	..	1	2	..	93
Lead Poisoning	..	..	1	..	..	..	..	..	1
Leprosy	..	..	..	..	2	..	..	..	2
Leptospirosis	1	..	4	..	..	..	..	..	5
Malaria	..	1(1)	1(1)	..	..	..	..	..	2
Meningococcal Infection	1(1)	..	4(1)	..	..	..	..	..	5
Ophthalmia	..	..	..	..	..	..	..	5	5
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	1(1)	..	..	..	..	1	..	..	2
Puerperal Fever	..	1	..	..	..	..	..	..	1
Rubella	..	6(5)	..	..	1(1)	..	..	..	7
Salmonella Infection	..	..	..	..	1(1)	..	..	..	1
Scarlet Fever	9(4)	9(7)	1(1)	8(5)	..	..	..	..	27
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	28(22)	20(13)	5(2)	9(7)	14(10)	2(1)	..	..	78
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

Australian Medical Board Proceedings.

QUEENSLAND.

THE following notice was published in the *Queensland Government Gazette*, No. 99, of July 18, 1959:

The Medical Board of Queensland,
Brisbane, 9th July, 1959.

PUBLICATION authorised under section 42 of *"The Medical Acts, 1939 to 1955,"* by The Medical Board of Queensland.

A. FRYBERG, President.

MEDICAL ASSESSMENT TRIBUNAL

Between

THE MEDICAL BOARD OF QUEENSLAND, Prosecutor

And

DOCTOR LESLIE WESTAWAY, Respondent

DR. LESLIE WESTAWAY was charged by The Medical Board of Queensland constituted under *"The Medical Acts, 1939 to 1955,"* under the provisions of subsection (1) of section 37 of the said Acts, that he, being a medical practitioner, was guilty of misconduct in a Professional Respect in that in his capacity as a general practitioner he omitted through negligence to do something which any reasonable man guided by those conditions which ordinarily regulate the conduct of human affairs would do, to wit that on the eighth day of November, 1958, at Cairns, in the State of Queensland, he omitted to make proper arrangements for the medical care of one of his patients, one Edward Warren, during his absence from Cairns at Tully in the said State. The finding and order of the Medical Assessment Tribunal pronounced on the twenty-third day of June, 1959, was—"I find the practitioner, Leslie Westaway, guilty of the Charge. I order that he pay to The Medical Board of Queensland by way of pecuniary penalty, the sum of £50. I direct that the registration of the said medical practitioner be suspended if he fails to pay the said penalty before the 15th July, 1959.

R. PHILP, Medical Assessment Tribunal."

By order of the Board.

A. FRYBERG, President.

RONALD COULSON, Registrar.

Medical Practice.

NATIONAL HEALTH ACT.

THE following notice is published in the *Commonwealth of Australia Gazette*, No. 47, of July 30, 1959.

NATIONAL HEALTH ACT, 1953-1958.

Notice in Pursuance of Section 134 A.

NOTICE is hereby given that, the Medical Services Committee of Inquiry for the State of Queensland, after investigation, having reported on the first day of June, 1959, concerning the conduct of June Myra Chard, of 623 Ipswich-road, Annerley, a medical practitioner, in relation to her provision of medical services under Part IV of the National Health Act, 1953-1958, I, Donald Alastair Cameron, Minister of State for Health, did on the 29th day of June, 1959, reprimand the said June Myra Chard.

Dated this 29th day of June, 1959.

DONALD A. CAMERON,
Minister of State for Health.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Cameron, Robert Stewart, M.B., B.S., 1958 (Univ. Sydney), 42 Cross Street, Double Bay.

Alexander, Michael, M.B., B.S., 1958 (Univ. Sydney), 96 Fitzgerald Avenue, Maroubra.

Runcie, Donald George, M.B., B.S., 1958 (Univ. Sydney), 85 Wyralla Avenue, Epping.

Deaths.

THE following deaths have been announced:

STEELE.—William Hart Steel, on August 1, 1959, at Winchelsea, Victoria.

ADEY.—John Kellerman Adey, on August 2, 1959, at Melbourne.

FRIEND.—Colin Friend, on August 3, 1959, at Kew, Victoria.

LARKINS.—Graeme Larkins, on August 9, 1959, at Melbourne.

Diary for the Month.

AUGUST 25.—New South Wales, B.M.A.: Hospitals Committee.
AUGUST 26.—Victorian Branch, B.M.A.: Branch Council.
AUGUST 27.—New South Wales Branch, B.M.A.: Branch Meeting.
AUGUST 27.—South Australian Branch, B.M.A.: Scientific Meeting.
AUGUST 28.—Queensland Branch, B.M.A.: Council Meeting.
SEPTEMBER 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

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